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THE UNIVERSITY OF ALBERTA

AN ANALYSIS OF CRITICAL GROWTH FACTORS IN  
THE JAPANESE ECONOMY : 1952 - 1961

by

EIJI FURUYAMA

A THESIS

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UNIVERSITY OF ALBERTA  
FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled: "An Analysis of Critical Growth Factors in the Japanese Economy : 1952 - 1961", submitted by Eiji Furuyama, in partial fulfilment of the requirements for the degree of Master of Arts.





## ABSTRACT

This thesis is an attempt to analyse some of the critical growth factors in the postwar Japanese economic development. The basic method of analysis which is employed throughout the thesis is national income account technique. The first chapter of the thesis discusses the economic situation in the immediate postwar period and is more or less independent of the analysis developed in the remaining part of the thesis. It is assumed in this thesis that the fundamental force of economic development is effective demand. There would be no economic growth where there is no effective demand. The thesis, therefore, attempts to analyse and explain how effective demand was created in the Japanese economy and was able to sustain an extremely high rate of economic growth. The supply side of the economy is analysed in terms of sources of gross domestic savings and patterns of income distribution as well as supply conditions of labour and technological development. The paucity of domestic supplies of basic industrial raw materials and food in the Japanese economy renders the economy dependent upon foreign trade. In this kind of economy, the key factor of economic growth is often found in the foreign trade sector. Japan's import dependability and the ability to export which the country successfully achieved in order to finance increasing imports are discussed in the fourth chapter of this thesis. The concluding chapter contains evaluating remarks on the analysis developed in the main body of the thesis and a prognosis of probable trends of future development of the economy, though the prognosis is not presented in specific terms.





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Eiji Furuyama



## TABLE OF CONTENTS

	Page
ABSTRACT.....	iii
ACKNOWLEDGEMENT.....	iv
LIST OF TABLES.....	v
LIST OF FIGURES.....	ix
INTRODUCTION.....	1
Chapters	
I. THE IMMEDIATE POSTWAR SITUATIONS.....	5
II. SOME CONSIDERATIONS OF DEMAND CONDITIONS.....	32
A. A Statistical Break-Down of Components of Gross National Expenditure.....	32
B. Basis of Entrepreneurial Optimism.....	40
C. Summary and Prelude to Chapter III.....	59
III. SOURCES OF SAVINGS AND SOME CHARACTERISTICS OF INCOME DISTRIBUTION.....	63
A. Inflow of Foreign Capital.....	65
B. Sources of Domestic Savings.....	67
C. Income Distribution: Statistical Findings....	72
D. Income Distribution: An Analysis.....	97
E. Some Aspects of Credit Creation.....	120
F. Summary.....	130
APPENDIX: A Selective List of Technical Intro- ductions in the Postwar Period.....	132
IV. AN ANALYSIS OF EXPORT GROWTH.....	135
A. Pattern of Imports.....	138
B. Pattern of Japanese Exports.....	147
C. Growth of Exports: Statistical Examinations..	152
D. Some Problems of Exchange Rates.....	158
E. Summary.....	172
V. CONCLUDING OBSERVATIONS.....	174
BIBLIOGRAPHY.....	180





# LIST OF TABLES

		Page
0 - 1	INDEX NUMBERS OF PER CAPITA PRODUCT AT CONSTANT PRICES	1
1 - 1	INDICES OF INDUSTRIAL PRODUCTION	6
1 - 2	GROSS NATIONAL PRODUCT IN 1935 YEN	6
1 - 3	THE DAMAGE TO PRODUCTIVE CAPACITY OF SELECTED INDUSTRIES	10
1 - 4	INFLOW OF FOREIGN FORCED LABORERS	11
1 - 5	NUMBER OF DRAFTED WORKERS	11
1 - 6	PREWAR JAPAN'S DEPENDENCE ON "YEN BLOCK" IN RAW MATERIAL SUPPLY	13
1 - 7	PRODUCTION INDICES OF MINING AND MANUFACTURING INDUSTRIES: APRIL - NOVEMBER, 1945	15
1 - 8	MONEY IN CIRCULATION: 1946 - 50	19
1 - 9	WHOLESALE PRICE INDEX: 1945 - 49	19
1 - 10	CONSUMER PRICE INDEX: 1946 - 50	20
1 - 11	BLACK MARKET PRICE INDEX	20
1 - 12	SALES OF RECONSTRUCTION FINANCE DEBENTURES	25
1 - 13	CHANGE IN NATIONAL TAX REVENUE: 1948 - 50	27
1 - 14	THE WEIGHT OF TAXATION IN NATIONAL INCOME	27
1 - 15	THE U. S. FOREIGN AID BUDGET FOR JAPAN	28
1 - 16	THE REALIZED EXPENDITURES OF THE AID	29
1 - 17	BALANCE OF PAYMENTS IN THE IMMEDIATE POSTWAR PERIOD	29
2 - 1	EXPENDITURE ON GROSS NATIONAL PRODUCT: AN INTERNATIONAL COMPARISON	34



# List of Tables (Continued)

		Page
2 - 2	GROWTH TREND OF COMPONENTS OF GNP: A COMPARISON OF GERMANY(W) AND JAPAN	38
2 - 3	RATES OF CAPACITY UTILIZATION AND INDEX	41
2 - 4	STRUCTURE OF EXPORTS AND PRODUCTION OF MANUFACTURED GOODS	43
2 - 5	AN INTERNATIONAL COMPARISON OF PER CAPITA PHYSICAL CONSUMPTION	58
2 - 6	INTERNATIONAL COMPARISON OF PER CAPITA INCOME	59
2 - 7	PERCENTAGE DISTRIBUTION OF NATIONAL INCOME BY FACTORS	60
2 - 8	SECTORAL DISTRIBUTION OF GROSS DOMESTIC SAVINGS	61
3 - 1	WHOLESALE PRICES AND COST OF LIVING INDICES: 1953 - 61	65
3 - 2	BALANCES OF LONG AND SHORT TERM FOREIGN CAPITAL: 1957 - 61	67
3 - 3	DISTRIBUTION OF GROSS DOMESTIC SAVINGS BETWEEN HOUSEHOLD AND NON-HOUSEHOLD SECTORS: AN INTERNATIONAL COMPARISON	70
3 - 4	PERCENTAGES OF NON-HOUSEHOLD SECTOR SAVINGS NET OF DEPRECIATION ALLOWANCES	71
3 - 5	PERCENTAGE SHARES OF COMPENSATION OF EMPLOYEES IN NATIONAL INCOME AT FACTOR COST: AN INTERNATIONAL COMPARISON	73
3 - 6	PERCENTAGES OF EMPLOYED WORKERS IN TOTAL WORKING POPULATION: AN INTERNATIONAL COMPARISON	74
3 - 7	PERCENTAGES OF EMPLOYED WORKERS IN THE TOTAL WORKING POPULATION IN JAPAN: 1953 - 61	75
3 - 8	THE TREND IN EMPLOYMENT STRUCTURE AND DISTRI- BUTION PATTERN OF NATIONAL INCOME BY FACTORS	75
3 - 9	THE RELATIVE SHARES OF LABOR INCOME IN MANUFACTURING INDUSTRIES: AN INTERNATIONAL COMPARISON.	78



# List of Tables (Continued)

		Page
3 - 10	THE RELATIVE SHARE OF LABOR IN MAJOR MANUFACTURING INDUSTRIES IN JAPAN: 1952 - 1960	82
3 - 11	THE TREND IN LABOR PRODUCTIVITY IN MINING AND MANUFACTURING INDUSTRIES IN JAPAN: 1953 - 1961	85
3 - 12	INDEX OF REAL WAGE RATES IN MINING AND MANUFACTURING INDUSTRIES: 1953 - 1961	86
3 - 13	ANNUAL RATES OF REAL GNP GROWTH OF THE COUNTRIES REPRESENTED IN FIGURE 3 - 3 1953 - 1961	95
3 - 14	LABOR MARKET SITUATIONS: 1953 - 1961	113
3 - 15	EMPLOYMENT OF COLLEGE GRADUATES	114
3 - 16	DISTRIBUTION OF WORKING POPULATION	117
3 - 17	SCALE OF ENTERPRISES AND WAGE DIFFERENTIALS: AN INTERNATIONAL COMPARISON	117
3 - 18	WAGE DIFFERENTIAL BY DIFFERENT AGE GROUPS (MALE WAGE EARNERS IN MANUFACTURING INDUSTRY: 1961)	119
3 - 19	AGE COMPOSITION OF WORKERS IN THE MANUFACTURING INDUSTRY: AN INTERNATIONAL COMPARISON: 1961	120
3 - 20	THE PERCENTAGE RATIOS OF INTEREST ON CONSUMERS' DEBT TO NATIONAL INCOME: AN INTERNATIONAL COMPARISON: 1952 - 1961	127
3 - 21	THE RELATIVE SIGNIFICANCE OF TRADE CREDIT IN COMPANY FINANCING: CASES OF THE UNITED STATES AND JAPAN: 1952 - 1959	129
4 - 1	JAPAN'S DEPENDENCE ON IMPORTS: 1956	137
4 - 2	BALANCE OF TRADE: 1952 - 1961	138
4 - 3	PERCENTAGE DISTRIBUTION OF IMPORTS: 1960	141
4 - 4	IMPORT QUANTUM INDICES: 1953 - 1961	142
4 - 5	JAPAN'S EXPORT INTENSITIES WITH RESPECT TO 21 COUNTRIES	150





# List of Tables (Continued)

		Page
4 - 6	GROWTH RATES OF WORLD TRADE: 1952 - 1961	155
4 - 7	EXPORT GROWTH RATES OF SEVEN MAJOR EXPORTING COUNTRIES: 1952 - 1961	155
4 - 8	MULTIPLE EXCHANGE RATES: SELECTED ITEMS (FEBRUARY, 1949)	159
4 - 9	INTERNATIONAL INDICES OF INDUSTRIAL PRODUCTION: 1956	167
4 - 10	INDUSTRIAL INCOMES IN DOLLARS CONVERTED BY THE EXCHANGE RATES: 1956	170
4 - 11	THE RATIOS OF INDUSTRIAL DOLLAR INCOMES TO INDUSTRIAL PRODUCTION	170



# LIST OF FIGURES

		Page
2 - 1	GROWTH TREND OF COMPONENTS OF GNP: A COMPARISON OF GERMANY (W) AND JAPAN	39
2 - 2	TIME SERIES CONSUMPTION FUNCTION: 1952 - 1961	55
3 - 1	AN ILLUSTRATION OF THE SCISSORS EFFECT BETWEEN THE RELATIVE NUMBER OF EMPLOYED WORKERS AND THE RELATIVE SHARE OF COMPENSATION OF EMPLOYEES: 1953 - 1961	76
3 - 2	THE TREND IN LABOR PRODUCTIVITY AND REAL WAGE RATES	86
3 - 3	AN INTERNATIONAL COMPARISON OF THE TRENDS IN LABOR PRODUCTIVITY AND REAL WAGE RATES:	92
3 - 4	AN ILLUSTRATION OF THE CONCEPT OF THE ELASTICITY OF FACTOR SUBSTITUTION	102
3 - 5	AN ILLUSTRATION OF THE RELEVANT RANGE OF AN ISOQUANT	110
4 - 1	EFFECTS OF IMPORT RESTRICTION IN PARTIAL EQUILIBRIUM	143
4 - 2	QUANTUM INDICES OF MANUFACTURED EXPORTS: WORLD AND JAPAN: 1952 - 1961	156
4 - 3	EXPORT PRICE INDICES OF MANUFACTURED GOODS: WORLD AND JAPAN: 1952 - 1961	156



## INTRODUCTION

At the outset, I should like to make clear why I chose postwar Japanese economic development as the subject of my thesis. First, the theme itself possesses an intrinsic intellectual appeal to an economist primarily interested in developmental economics, because the Japanese economy in the postwar period has achieved the highest rate of economic growth among nations. The following table gives a brief illustration of this fact.

Table 0 - 1

INDEX NUMBERS OF PER CAPITA PRODUCT IN CONSTANT  
PRICES : 1950 - 1960  
1953 = 100

	1950	1953	1954	1955	1956	1957	1958	1959	1960
Canada .....	90	100	94	99	106	103	101	102	102
France .....	91	100	104	109	114	119	120	121	128
Germany (W) ..	80	100	106	117	124	129	131	138	148
Japan .....	--	100	102	112	119	129	127	149	167
U. K. ....	95	100	104	106	109	110	110	113	117
U. S. A. ....	90	100	97	102	103	103	102	104	105

Source: United Nations, Yearbook of National Accounts Statistics 1961, New York: United Nations, 1962.

The second reason for choosing the present topic is that I hold a comparative advantage in analysing the postwar Japanese economic development because of familiarity with the Japanese language. Although, in this field, translation of the





literature from Japanese into English has shown a remarkable progress in recent years, a majority of the work still appears in the Japanese language only. Because of their unfamiliarity with the language, most foreign economists do not have access to the original sources of information.

Some comments are required regarding the method employed in the following analysis. Within the general framework of economic analysis there are two distinct approaches of a macroscopic nature. One approach is model-building in which a series of economic functions is established on the basis of assumed inter-relationships and available statistical data and the behavior of each function is carefully examined in strict quantitative terms. The other approach is a verbal description of the economy and is concerned with examining the performance of an economy as a whole in a cause-and-effect context. In this thesis the latter approach will be employed.<sup>1</sup>

The thesis consists of five chapters. The first chapter discusses the economic situation of the immediate post-war period which appears to deserve a separate treatment from an analytical point of view. Chapter II examines some aspects of effective demand, the growth of which is believed to have provided the very basis of the whole process of the postwar economic development of Japan. Was expansion primarily

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<sup>1</sup>. As to econometric models of the Japanese economy, consult the following. L. R. Klein and Y. Shinkai, "An Econometric Model of Japan 1930 - 59", International Economic Review, January 1963; and Hiroya Ueno, "A Long-term Model of the Japanese Economy" in the same journal, May 1963.



due to a temporary consumption boom, large export surpluses, growth of the public sector, or to rapid growth of private capital formation? With the aid of statistics, it will be revealed that the high growth rate was largely due to the buoyancy of private capital formation.

Chapter III of the thesis is dedicated to the analysis of the sources of capital formation. Specifically, where has the capital come from; was there an appreciable inflow of foreign capital to finance the domestic capital formation; and what sectors of the economy were the main savers? The purpose of Chapter IV is to discuss the importance of foreign trade to the Japanese economy. This question is of major importance since the growth of productive capacities, as well as of production itself, would not have been possible were it not for a concomitant growth of imports. This is especially true of the Japanese economy which has a chronic domestic shortage of basic industrial raw materials and food. Roughly speaking, there are two ways of financing imports; through inflow of foreign capital and through the credits obtained from exports. The thesis will conclude with evaluating observations of the remarks made in Chapters II, III and IV and also with a prognosis for the future. It is apparent that the Japanese economy is presently experiencing a major turning point. Japan's affiliation with the Organization for Economic Cooperation and Development, and the shift of her status to an Article Eight country of the International Monetary Fund will have a significant impact on the future trend



of Japanese economic development.

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2.

Japan was invited by the Organization for Economic Cooperation and Development to join the organization as its 21st member in July, 1963. In April 1964 Japan moved toward the IMF Article Eight status.





## CHAPTER I

### IMMEDIATE POSTWAR SITUATIONS

In discussing postwar Japanese economic development, one needs to make a distinction between economic rehabilitation and economic growth. In the immediate postwar period a large portion of economic activity was at an extremely low level because of difficulties characteristic of a war-defeated nation. These difficulties were an absolute shortage of raw materials and a disrupted communications system. In addition, a dislocated labor force combined to force many factories and mines to close down operations even though productive machinery existed. Under such circumstances an economy is ready to expand at a fantastic rate, within a relatively short period, with the re-opening of raw material supplies, restoration of communication and transportation systems and re-organization of labor forces.

While the distinction between rehabilitation and development is certainly necessary, a concrete line of distinction is extremely elusive. Economic growth is a continual process and drawing a demarcation line between the period of rehabilitation and that of development is often a mere academic exercise. However, for the purpose at hand here it is useful to determine in what year rehabilitation ended and development started. A possible approach for determining the end of the rehabilitation



period is by means of comparison of industrial production indices for the period over 1932 to 1936 and the postwar period. A similar comparison could also be applied to per capita GNP in constant yen. The following tables show the results of these comparisons.

Table 1 - 1

INDICES OF INDUSTRIAL PRODUCTION  
1932 - 1936 = 100

Industries	1949	1950
Mining and Manufacturing	80.0	104.6
Mining .....	103.5	113.5
Manufacturing .....	77.4	103.5
Metals.....	96.8	143.0
Machineries .....	117.7	128.7
Ceramics .....	94.8	121.1
Lumber .....	102.4	123.8
Textiles .....	25.5	44.0
Chemicals .....	87.7	136.9
Food Processing ...	75.3	74.5
Printing .....	69.7	86.7
Gas and Electricity ....	173.2	192.2

Source: Economic Planning Agency, A Postwar Economic History of Japan, Vol.1. Tokyo: Economic Planning Agency, 1957, pp.345 - 346.

Table 1 - 2

GROSS NATIONAL PRODUCT IN 1935 YEN

Years	GNP (mill.yen)	Population (thous.)	Per Capita GNP (yen)
1934 - 36 ...	16,736	68,662	243
1950*.....	16,240	83,200	195
1951*.....	18,430	84,500	218
1952*.....	20,360	85,800	307

\*Japanese fiscal year (April - March)

Source: Economic Planning Agency, National Income White Paper, 1961. Tokyo: Economic Planning Agency, 1962.



In terms of industrial production the economy recovered its prewar level by 1950 while per capita real GNP in the period 1951 - 1952 was approximately the same as that of the period 1934 - 1936. On the basis of these figures it may be said that the rehabilitation was completed sometime in the early 1950's. Therefore, throughout this thesis the postwar period should be interpreted as the period from 1951 - 1952 to the present. The period prior to these years will be called the immediate postwar period in order to avoid unnecessary confusion of terminology. The analysis that will follow in Chapters II, III and IV will be concerned with the postwar period in which the elements of rehabilitation are held to have been negligible.

The state of the Japanese economy in the immediate postwar period was a typical example of how successful modern warfare can be in destroying the economy of a nation within a period of two or so years. The loss of territory, capital equipments and the potential natural resources was immense. About half of Japan's dwelling places was burnt down. The nation lost about 45 per cent of its former territories and the damage caused to the productive capacity of manufacturing industries reached 44 per cent of the level which Japan had once achieved in 1944. In addition, the population increased by six millions during the two years of the immediate postwar period due to the repatriation from Japan's former overseas territories and also due to a baby crop boom. An estimate given by the Economic





Stabilization Board shows that the damage caused to the national wealth of non-militaristic nature totalled 64.3 billion yen in current prices, or approximately 25 per cent of the peak level<sup>3</sup> which Japan had achieved in the prewar period. The loss of airplanes, warships and the items directly engaged in the execution of the war amounted to 40.4 billion yen in current prices,<sup>4</sup> almost 100 per cent of what Japan had once possessed. The total value of the national wealth of non-militaristic nature which survived the war damage was estimated at 188.9 billion yen in prices of August 1945; a figure comparable to the national wealth of the same nature in 1935 at 186.8 billion yen in prices of August 1945. This would indicate that the country lost all of the non-militaristic national wealth which had been accumulated in the preceding ten years. No exact figure is available as to the loss of Japan's overseas assets, but a rough estimate provided by the Supreme Command of Allied Powers suggests that it might have amounted to well above five billion dollars in<sup>5</sup> prewar prices.

The loss of territories and national wealth was immediately followed by a rapid population increase. On November 1 in 1945 the total population of Japan was estimated at 71,998 thousands without including those Japanese nationals in Korea, Taiwan, South Saghalien, Okinawa and Manchuria. Approximately 6.5 million Japanese were then being stationed overseas

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3.

The national wealth of non-militaristic nature includes not only productive capital assets, but also residential housing and consumer durables.

4. Economic Planning Agency, A Postwar Economic History of Japan, Vol. 1., Tokyo: Economic Planning Agency, 1957, pp 8 - 15.

5. ibid., pp. 20 - 22.



as military service-men, emigrants and civil servants. Together with the natural increase, Japan was to absorb each year approximately 2.5 million people into her devastated land over a period of five years.

Table 1 - 3 is a comparison of the productive capacities of selected industries in existence at the end of 1944 and at August 1945. While interpreting the table, it should be borne in mind that the productive capacity of some of the industries listed had already been reduced before 1944 because of inadequate maintenance and replacement during the war. A detailed calculation conducted by the Economic Stabilization Board with respect to 56 industries reveals that the weighted average of the total loss of productive capacity of Japan's manufacturing industries during the period from the end of 1944 to August 1945 approximated to 44 per cent of the 1944 level.<sup>6</sup>

During the war the Japanese economy was under heavy supervision of the Government which attempted to direct available resources to war purposes. Government control of industries was most conspicuously manifested in a planned allocation of industrial raw materials through industrial ration systems and also in Government efforts to mobilize so-called drafted workers. These drafted workers largely consisted of students under the military conscription age and females who might otherwise have stayed at home. War prisoners, forced laborers from the colonies, mainly from Korea and China, were

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<sup>6</sup>. ibid. p 101





Table 1 - 3

THE DAMAGE TO THE PRODUCTIVE CAPACITY OF SELECTED INDUSTRIES:  
1944 - 1945.

Industries	Unit	(A)	(B)	B/A%	(C)
Steam power generation .....	1,000kw/hour	2,450	741	30.2	1,680
Hydro electric power generation	1,000kw/hour	6,074	0	0.0	6,233
Gas.....	1,000m <sup>3</sup> /day	4,620	1,453	31.5	2,978
Man made petroleum .....	1,000kl/year	80,800	36,000	44.6	42,400
Aluminum ..	ton/month	11,100	2,650	23.9	8,350
Machine tools	ton/year	170,000	43,000	25.0	120,000
Vacuum tubes	1,000/year	9,020	5,020	55.7	4,000
Steam locomotives	1/year	826	227	27.5	--
Automobiles	1/month	3,600	750	20.8	1,850
Ammonium sulphate	1ton/year	1,659,000	897,000	54.1	762,000
Caustic soda	1ton/year	722,550	257,860	35.7	464,690
Cotton spinning	1spindle/day	3,592,000	683,352	19.0	2,809,046

Note: (A) = capacity in existence in 1944, (B) = capacity damaged and (C) = capacity in existence in 1945. The capacity in existence in 1945 is not necessarily the same as the capacity in existence in 1944 less the capacity damaged. It is not only the air raid but many other circumstances that change the productive capacities of these industries.

Source: Economic Planning Agency, A Postwar Economic History of Japan, Vol.I., Tokyo: Economic Planning Agency, 1957, pp. 99-101

also brought into industries in order to compensate for the loss of Japanese male workers conscripted by the military forces.

The effect of such an abnormal structure of labor force was naturally hazardous. It can readily be imagined that the introduction of drafted workers and forced laborers considerably lowered the efficiency of industrial production. Furthermore, Japan's surrender in August 1945 suddenly put an end to the administration of the war-time state-controlled economy. The





war prisoners were liberated; Korean and Chinese forced laborers could rightly refuse to work for the Japanese industries; and student and women laborers were demobilized.

Table 1 - 4

INFLOW OF FOREIGN FORCED LABORERS

Years	Number
1939 .....	85,000
1940 .....	88,000
1941 .....	81,000
1942.....	120,000
1943.....	170,000
1944 .....	290,000

Table 1 - 5

NUMBER OF DRAFTED WORKERS

Years	Number	Cumulative
1939 .....	850	850
1940 .....	52,692	53,542
1941 .....	258,192	311,734
1942 .....	311,649	623,384
1943 .....	699,728	1,323,111
1944 .....	299,448	1,552,559
1945 .....	49,771	1,602,330

Source: Economic Planning Agency, A Postwar Economic History of Japan, Vol. 1. Tokyo: Economic Planning Agency, 1957, p.18.

A sudden state of labor shortage was created in many plants and mines. It took a considerable time for dislocated



and conscripted workers to return to their former working places.

Japan's dependence on international trade is a well-known fact. With a paucity of domestic natural resources and a rapidly expanding economy, Japan became a leading trading nation at a relatively early stage in her modern economic development.<sup>7</sup> By the 1930's, in order to obtain steady supplies of industrial raw materials and food, as well as to secure stable export markets, Japan deliberately established the so-called "yen bloc" which embraced the country's former colonies, Manchuria and parts of China. In the early 1940's the yen bloc came to supply roughly one third of Japan's total imports, assuming a significant role as an integral part of the Japanese industrial complex. The heavy loss of merchant shipping during the war, however, had already cut Japan off from supplies of the yen bloc as early as 1944. The inadequate domestic natural resources and a dwindling stock of the past accumulation did not last long enough to keep feeding the war-exhausted economy; and the surrender in August 1945 put a full stop to these supplies.

While discussing the immediate postwar economic situation, the impact of the occupation upon the Japanese economy should not be overlooked. Although Japan retained formal administrative functions within her Government after her unconditional surrender, de facto decision-making virtually

---

7.

"During the 1930's Japan became one of the great trading nations of the world. In 1938 her commodity exports to her colonies and to foreign countries represented 5.4 per cent of world exports; they were exceeded only by those of the United States, the United Kingdom, and Germany." (G.C.Allen, Japan's Economic Recovery , London: Oxford University Press, 1958, p.163.)





Table 1 - 6

PREWAR JAPAN'S DEPENDENCE ON "YEN BLOC" IN RAW MATERIAL SUPPLY

Items	Year	(A)	Korea	Taiwan	S.Sagh.	Manch.	China	Others	(B)
Rice <sup>1</sup> ...	*	65,873	6,399	4,278	--	--	--	2,615	83.2%
Soya beans ..	1940	3,199	355	--	--	5,269	--	--	36.3
Salt ..	1940	574	311	156	--	1,223	--	--	25.4
Lumber <sup>2</sup> ..	1939	19,776	2,782	320	5,422	4,000	--	--	61.2
Iron ore	1940	993	439	--	--	47	1,175	2,041	21.1
Coal ....	1940	57,309	1,441	--	3,124	808	3,787	473	85.6

Notes: <sup>1</sup> and <sup>2</sup> : rice and lumber are measured in 1-koku and 1,000m<sup>3</sup>, respectively. 1-koku is approximately equivalent to 180 - litre. \* Average of the period 1936 - 1940.

(A) = domestic supply and (B) = percentage of domestic supply to total supply. The physical unit of measurement of the items except for rice and lumber is 1,000 ton.

Source: Economic Planning Agency, A Postwar Economic History of Japan Vol. I. Tokyo: Economic Planning Agency, 1957, p.19.

came from the General Headquarters of the Supreme Command of Allied Powers. The Potsdam Declaration, the acceptance of which meant Japan's unconditional surrender, briefly outlined what the Japanese economy was to become:

"Japan shall be permitted to maintain such industries as will sustain her economy and permit the exact-  
ion of just reparations in kind, but not those  
which would enable her to re-arm for war."

In the early phase of the occupation, the Allied Powers were actively concerned with exacting reparations and with ensuring that Japan should not reconstruct industries of strategic importance. Some of the reparations were in fact met by the distribution of Japan's overseas assets. Some specialized firms

8.

The Potsdam Declaration, quoted in Edwin O. Reischauer, The United States and Japan. Cambridge: Harvard University Press, 1950. Appendix 1, p.320.





were established under the control of the Allied Powers to wrench machines and tools from Japanese factories to transport them to the victims of Japan's aggression.

In the early years of the occupation, the Allied Powers were indifferent to economic recovery of Japan and were committed to ambitious measures of social and political reform. Their aim was to destroy permanently the material basis of Japan's military strength and at the same time to foster institutions and forms of organizations which they believed to be favorable to democratic modes of life and liberal economic activities. The objective of preventing a revival of an industrial war potential was manifested in proposals to restrict the capacity of the metal, chemical and engineering industries. The merchant fleet to be reconstructed, for example, was to be limited to one and a half million gross tons of steel ships and no single vessel should exceed 5,000 gross tons or should have a maximum speed of over 15 knots. A typical argument representing the Allied Powers occupation policy toward Japan may be found in the following remarks of an Australian diplomat.

"Clearly Japan can have no armed forces, secret police or civil aviation. In particular, strong provisions concerning armament and chemical industries are necessary to prevent the re-establishment of industries that could possibly be used for the purpose of rearmament. We must not give Japan an opportunity to establish even the nucleus of future armament or chemical industries." 9

The policy of social reforms was expressed in various measures designed to diffuse economic wealth and initiative more widely; the dissolution of the huge business concerns or Zaibatsu, the purging of influential business leaders, the enact-

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9. Herbert Vere Evatt, New York Times Magazine, February 3, 1946.



ment of an anti-trust law, the Land Reform designed to transform tenants into peasant proprietors, the introduction of labor unions, and measures for the promotion of social welfare. As G. C. Allen points out, "whatever the political and social merits of these measures might have been, they certainly made no contribution to economic recovery. Most of them actually impeded it. 'Punishment and Reform' is indeed an apt description of this first phase of American policy."<sup>10</sup>

The physical damage to productive capacities, the misplaced labor force, the loss of the yen bloc, an acute shortage of industrial raw materials, the pressure of population growth, and the occupation policy with a heavy inclination toward punishment and reform all combined to hold the economic activities in the immediate postwar period at an extremely low level as shown in the following table.

Table 1-7

PRODUCTION INDICES OF MINING AND MANUFACTURING INDUSTRIES: APRIL - NOVEMBER, 1945  
1935 - 37 = 100

	April	May	June	July	Aug.	Sept.	Oct.	Nov.
Manufacturing	21.7	21.1	15.6	10.8	7.5	8.3	12.6	12.8
Mining	98.8	95.6	86.9	61.7	36.3	20.9	16.5	16.7

Source: Economic Planning Agency, A Postwar Economic History of Japan, Vol.I, Tokyo: Economic Planning Agency, 1957, p.37.

<sup>10</sup>. G. C. Allen, op. cit., p.18.





It was noted earlier in this chapter that the physical damage sustained by the industries during the war was approximately 44 per cent of the 1944 level in terms of a weighted average of capacities. Although this figure is certainly very impressive, the damage to productive capacities itself was not so serious as to let the level of manufacturing production dip below one tenth of the prewar level. This fact might have been interpreted by those concerned with economic policy as indicating some possibility of relatively early recovery of the Japanese economy. As a matter of fact, in 1945 there was considerable optimism among the Japanese regarding prospects for economic recovery. Such optimism was also to be observed among some foreign observers.

"In Europe it was at first confidently expected that Japan's emergence from these confusions would not long be delayed, and her former competitors, particularly those in the textile trades, awaited with anxiety her early return to world markets".<sup>11</sup>

Optimism of this sort was very likely to lead to a rationalization for an easy monetary policy. The mounting pressure of pent-up demand was ripe for explosion. The people were no doubt ready to shift from savings to expenditures.<sup>12</sup> By August 1945 the amount of national bonds which had been purchased

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11. ibid., pp. 16 - 17.

12. The average propensity to consume defined in relation to disposable income in 1944 was estimated at 57.8, while the same propensity in 1947 was 104.6. (Economic Planning Agency, Economic Statistics of Japan, Tokyo: Shiseido, 1959.)





during the war reached 123,000 million yen while the outstanding claim of the wartime compensation totalled 104,700 million yen, both in current prices.<sup>13</sup> Since the gross national product in 1944 was 74,503 million yen in current prices, the national debts which had been accumulated by August 1945 were indeed astounding amounts. Under these circumstances the Government announced, apparently with an optimistic estimation of physical supply elasticity, permission for unconditional withdrawal of bank deposits and plans for lavish fiscal expenditure on economic reconstruction. Although the payment of the wartime compensation was eventually suspended following a strong recommendation put forward by the Supreme Command of Allied Powers, liberal fiscal expenditures were continued for a while with an almost expected consequence of a galloping inflation.

The inflationary policy then taken by the Government was based upon amazingly simple reasoning. Their advocacy was that an enormous amount of military expenditure which was closed after the war must be compensated for by other types of public expenditures so that the economy would not encounter a deflationary pressure. While it was true that end of military expenditures allowed wide room for fiscal expenditures during the immediate postwar period, the Government seems to have given no serious attention to why a huge military expenditure was possible during the war

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<sup>13</sup>. The majority of these bonds was held by the residents of Japan. Under the wartime compensation system, private enterprises were entitled to be compensated for the loss which they suffered from due to the circumstances arising directly from the participation in the war. The largest item in this compensation was the loss of merchant fleets engaged in the transportation of military troops.



without a serious inflation.<sup>14</sup> In 1944, for example, the Government purchase of goods and services, transfer payments, and subsidies were estimated at 27,672, 1,238 and 1,833 million yen respectively with current deficits of 15,450 million yen. A percentage expression of components of the gross national expenditure in the same year reveals that the weight of personal consumption was as low as 34.8 % while the Government expenditure on current account, the domestic capital formation, and the public sector capital formation were 36.3, 29.6 and 3.6% respectively. Apparently, these figures reflect heavy public expenditure on one hand and suppressed private consumption on the other. During the war it was widely practised that wage earners received their wages partly in national bonds instead of cash and the Government was aggressively campaigning the encouragement of savings. Furthermore, prices in general during the war were not adequately reflecting the relationships between demand and supply since almost all prices were publicly fixed and the so-called black market practices were subject to heavy punishments. The administrative power to enforce rationing and control black market practices was considerably weakened because of the bad morale of civil servants during the immediate postwar period and an explosion of pent-up demand was more than enough to cancel out deflationary effects of the close of huge military expenditures. The fundamental cause of the inflation in these years, however, should be ascribed to an acute shortage of industrial raw materials which made the physical supply elasticity

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<sup>14</sup>. The wholesale price indices in the years 1941, 1942, 1943 and 1944 were 1.8, 1.9, 2.0 and 2.0, respectively as against 1 of the period 1934 - 36. (Economic Planning Agency, Economic Statistics of Japan, Tokyo: Shiseido, 1959.)





extremely low in spite of the productive capacities then in existence<sup>15</sup>. The changes in money supply and prices in these years are shown in Tables 1 - 8, 1 - 9, 1 - 10 and 1 - 11.

Table 1 - 8

MONEY IN CIRCULATION:1946 - 50

Year	Million yen
1946 .....	94,851
1947 .....	220,854
1948 .....	356,795
1949 .....	357,970
1950 .....	425,446

Table 1 - 9

WHOLESALE PRICE INDEX  
1945 - 1949  
1934 - 36 = 1

Year	Index
1945 .....	3.503
1946 .....	16.271
1947 .....	48.152
1948 .....	127.926
1949 .....	208.764

Source: Economic Planning Agency, Economic Statistics of Japan  
Tokyo: Shiseido, 1959.

15. It is of some interest to note that the Minister of Finance who was chiefly responsible for the inflationary condition of the time was a self-pronounced Keynesian. Tanzan Ishibashi, then Minister of Finance, in a Diet meeting on July 25, 1946, made public the following statement which reads as follows in an English translation: "One of the most important purposes of a fiscal policy should be to ensure full employment. Where there is considerable unemployment as we observe at present, the budget deficits are not only inevitable but also even desirable. As pointed out by J. M. Keynes, a genuine inflation takes place only after full employment is achieved. There would be no dispute that unemployment in this country is extremely high. It is also true that prices are rising at a very high rate, but this is not a genuine inflation, because a great many people are still unemployed." (The original text is quoted in Economic Planning Agency, A Postwar Economic History of Japan. Tokyo: Economic Planning Agency, 1957, p.55.) Incidentally, Tanzan Ishibashi contributed a preface to the Japanese edition of The General Theory of Employment, Interest and Money when he was the editor in chief of The Oriental Economist (Toyo Keizai). This statement by Tanzan Ishibashi has become one of the jokes among Japanese economists.





Table 1 - 10

CONSUMER PRICE INDEX : 1946 - 50  
1932 - 36 = 1

Year	Index
1946 .....	50.6
1947 .....	109.1
1948 .....	189.0
1949 .....	236.9
1950 .....	219.9

Table 1 - 11

BLACK MARKET PRICE INDEX  
1945 = 100

Year	Index
1945 .....	100
1946 .....	192
1947 .....	254
1948 .....	--
1949 .....	820

Sources: Economic Planning Agency, Economic Statistics of Japan Tokyo: Shiseido, 1959. and Shoichi Mizuno, Japan's Price Fluctuations Tokyo: Toyokeizai, 1962, p.21.

It is often pointed out that one of the effects of inflation is to redistribute income toward the profit makers and holders of goods, and away from the rentiers and wage earners. The debt holders, pensioners, and people with relatively fixed income would suffer from the decreasing value of their real income under inflation while entrepreneurs, merchants and farmers would gain. In this case the gainers are likely to be the high savers. The effect of redistribution under inflation, therefore, logically speaking, would be a decline in consumption at each level of output. The effect in investment would be that the high profits of inflation would encourage investment. While this line of logic is generally true, it would be applied only to a mild sort of inflation under a free enterprise system but not to a hyper inflation such as the one experienced by the Japanese economy during the immediate post-war period.



In these years the prices of raw materials as well as of finished products were strictly administered by the Government and producers received raw materials for their production through a ration system. As naturally expected, the rationed prices of raw materials were considerably lower than those in black markets. In spite of frequent attempts by the Government to adjust the rationed prices to the "actual" prices, the discrepancy between the two was always considerably large. Producers, therefore, could gain much higher profits by selling their rationed raw materials in black markets rather than by transforming them into final products and selling them at the administered prices. An illegal disposition of rationed raw materials was a wide-spread practice among many producers. A steel producer who received a rationed share of coal, for example, would illegally channel it into black markets by gaining handsome profits and eventually such coal was burnt in households for heating purposes.

The recovery was slow, much slower than expected, and gloomy pessimism was so wide-spread among the Japanese that some even predicted that it would take an average Japanese citizen half a century before being able to wear "pure" woollen clothing again. A heroic attempt by the Socialist Government, which was established for the first time in Japanese history, to utilize intensively the only domestically available natural resource, i.e., low grade coal, for the purpose of economic reconstruction miserably failed in the face of inflation which was aggravated by increased fiscal expenditures and the acute shortage of basic raw materials. Throughout the years of 1947 and 1948, black market prices of consumer goods





were, on the average, five times higher than the administered prices and for capital goods approximately seven times greater.<sup>16</sup> The frequency of labor disputes increased from 1,035 in 1947 to 1,517 in 1948 while the weighted average of the mining and manufacturing production index was 49.4 at the end of 1947 as against 100 in 1935.<sup>17</sup> However, one simple fact remained almost unchanged: Japan still possessed workable productive capacities. Reasonable supplies of raw materials and the restoration of price mechanism, both apparently inter-related, were the seemingly necessary conditions for the economic rehabilitation. And the final solution to these problems came, not so much from inside the Japanese economy itself, but rather from outside. It was a drastic change of policy on the part of the Supreme Command of Allied Powers.

The heightening tension of the cold war and the recognition of Japan's strategic importance in the Far East on the part of the United States were the two major factors which significantly influenced the occupation policy toward Japan. In early 1948 an American official of high governmental post, Kenneth C. Royall, then Secretary of the Army of the United States, remarked as follows:

"Our decision will be made with realism and with a firm determination of doing all possible to prevent Japan from again waging unprovoked and aggressive and cruel war against other nations. We hold to an equally definite purpose of building in Japan a self-sufficient democracy, strong enough and stable enough to support itself and at the same time to serve as a deterrent against any other totalitarian war threats which might hereafter arise in the Far East.

"The dissolution of the Zaibatsu may present in itself no serious economic problem, but extreme decentralization of industry, while further impairing the ability to make war, may at the same time impair

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16. Economic Planning Agency, A Postwar Economic History of Japan Vol.I. Tokyo: Economic Planning Agency, 1957, p.159.

17. Economic Planning Agency, Economic Statistics of Japan Tokyo: Shiseido, 1959.





manufacturing efficiency and reduce the overall production and exportable surplus of Japanese industry, and may, therefore, postpone the day when Japan can become self-supporting. Such is our dilemma."18 (emphasis supplied)

In the first half of the 1940's the Allied Powers, especially the United States, were convinced that the only trouble in the Far East was Japan's military aggression and that the complete collapse of the Japanese empire had solved this problem. Japan was a bad boy in the Far East, therefore, he should be punished and reformed so that he might be allowed to return to the world society as a good boy. There was no apparent need for considerations designed to strengthen or hasten the rebuilding of Japan. The following statement by an American Japanologist seems to explain these circumstances clearly.

"With Japan prostrate, the rest of the Far East could quickly find its way back to stability and prosperity,, while we altruistically experimented with reforming the trouble-maker. If we were successful, some day he would be allowed to return to the society of nations, a chastened and wiser citizen. If not, so much the worse for him. We were giving him a chance to reform, but the ultimate outcome was his concern, not ours. We were not vitally concerned, because Japan, once stripped of military might, could never again menace a united world."19

The collapse of the Japanese empire, however, was by no means an end of the troubles in the Far East. Toward 1948 the western powers, especially the United States, quickly came to realize the crucial position of the mighty Russia and the constant threat of the possible expansion of Communism in the Far East. Nationalist China, which was expected by the United States to be-

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18. The New York Times January 6, 1948, p.18.

19. Edwin O. Reischauer, op. cit., p.31.



come a stabilizing power in the Far East, was forced to retreat to the island of Taiwan and the establishment of the People's Republic of China on the Chinese mainland in 1949 finally convinced the western powers that they had to look for some country other than China in order to secure a balance of power in the Far East. Thus, the changing world situations were to make a highly promising son of a bad boy. The reform and punishment policy for Japan was replaced with a policy to build up a reliable western ally in the Far East. In the early 1900's Japan emerged into a modern state as a deterrent in the Far East for the United Kingdom and half a century later the country was to recover as a deterrent for the United States.

As already pointed out in this chapter, the basic conditions required for Japan's economic recovery were the restoration of the normality of prices and an increase in raw material supplies; and the occupation authorities did not overlook these requirements. The efforts of the Supreme Command of Allied Powers to put the inflation under control were manifested in their dispatch of the Dodge mission from the United States to assist the Japanese Government to launch effective monetary and fiscal policy for economic recovery; and the problems of acute shortages of basic raw materials were to be substantially solved through increased foreign aid, mostly from the United States.

In February 1949 Senator Joseph Dodge arrived in Japan as the Supreme Economic Advisor for General MacArthur, the chief of the General Headquarters of the Supreme Command of Allied Powers. The Dodge plan consisted of (1) the close of lending by the Reconstruction Finance Bank, (2) the introduction of a balanced





budget and (3) the establishment of a single foreign exchange rate.<sup>20</sup> In October 1946 the Government enacted the Reconstruction Finance Act under which a specialized Government agency was authorized to sell debentures in order to raise funds required for the reconstruction of industries. This specialized agency was later established as the Reconstruction Finance Bank in January 1947 with a special function to provide long-term rehabilitation funds to those essential industries that the ordinary financial institutions considered poor credit risks. The activities of this bank, however, grew rapidly and became extremely inflationary, because the bank could obtain almost unlimited funds through sales of debentures to the Bank of Japan. The following table records the sales amount of the Reconstruction Finance debentures

Table 1 - 12

SALES OF RECONSTRUCTION FINANCE DEBENTURES  
unit: million yen

	1946	1947	1948	Total
The total sales amount.....	3,000	52,900	53,200	109,100
Purchased by the Bank of Japan...	2,545	39,930	27,829	70,304
Purchased by other financial institutions.....	454	12,970	25,371	38,795

Source: Economic Planning Agency, A Postwar Economic History of Japan Vol.III. Tokyo: Economic Planning Agency, 1959, p.80.

Since the total supply of externally raised industrial

20.

Under the Dodge program the exchange rate of yen to dollar was fixed at 360 yen per one U. S. dollar. The problems of exchange rate determination will be discussed in some detail in Chapter IV of this thesis.





funds in 1947 and 1948 was estimated at 133,403 and 437,703 million yen respectively, the role played by the Reconstruction Finance Bank must be said to have been highly significant. The Dodge mission, therefore, regarded the bank as one of the chief promoters of hyper-inflation. When the Dodge plan was executed in 1949, the lending operation of the bank was virtually closed and the bank itself was eventually dissolved in January, 1952, and its outstanding assets and obligations were assumed by the Japan Development Bank, another Government sponsored financial institution.

Basically, there would be only two means to the solution of demand-pull inflation; increasing physical supply elasticity and suppressing effective demand. The Dodge policy was undoubtedly the harshest sort of attempt to halt the hyper-inflation by suppressing effective demand through austere monetary and fiscal policies while expecting steady increase in the physical supply elasticity of Japan's domestic industries assisted by U. S. foreign aid. Following the close of the lending operations of the Reconstruction Finance Bank, Senator Dodge introduced the so-called "super balanced budget" in fiscal 1949. The end of budget deficits in 1949 was indeed a drastic change. The budget deficit for 1948 was in the neighborhood of 62.5 billion yen, while in 1949 the Government had actually 149 billion yen budget surplus. The size of the budget increased appreciably over this period, from 473 billion yen in 1948 to 741 billion yen in 1949, and yet the Government could afford to maintain surplus in its budget. The main source of increased revenue was taxation.



Table 1 - 13

CHANGE IN NATIONAL TAX REVENUE: 1948 - 50  
unit: million yen

Year	Total	Direct Tax	Ind. Tax	Others*
1947.....	189,165	99,409	82,135	7,621
1948.....	445,956	222,743	190,037	33,176
1949.....	636,068	344,374	243,445	48,249
1950.....	570,214	313,625	245,466	11,123

Notes: in current prices. \*includes payment by the Monopoly Corporation which produces cigarettes and salt under Government licence.

Source: Economic Planning Agency, A Postwar Economic History of Japan, Vol.III, Tokyo: Economic Planning Agency, 1959, p.124.

In 1950 the Government had again a budget surplus of about 125 billion yen to apply against the national debt which was reduced from 446 billion yen in 1948 to 316 billion yen in 1950. Undoubtedly, these repayments of debt had the effect of "ploughing back" the nation's surplus of spending potential which was perforce created through taxation into domestic capital formation, because most of the holders of debentures which had been issued by the Government was found among business sectors.

Table 1 - 14

THE WEIGHT OF TAXATION IN NATIONAL INCOME  
units: million yen and percentages.

Fiscal Year	National Tax	Local Tax*	Total	National Income
1934 - 36..	1,226 (8.5 )	648 (4.5)	1,874 (13.0)	14,372 (100)
1946.....	37,439 (10.4)	3,726 (1.0)	41,165 (11.4)	360,855 (100)
1950.....	570,214 (17.0)	188,281 (5.6)	758,495 (22.6)	3,361,048 (100)

\* prefectural, municipal or village residence tax.

Source: Economic Planning Agency, A Postwar Economic History of Japan Vol.III, Tokyo: Economic Planning Agency, 1959, p.123.





According to Jerome B. Cohen, in the annals of history, "never had a vanquished nation received such a helping hand from the victor" as the U. S. foreign aid to Japan in the immediate postwar years. Furthermore, according to Cohen, in spite of the magnitude of the crime at Pearl Harbor, the United States, instead of imposing severe penalties, endeavored to help Japan to recover her economic health so that "it might cease to be a drain on the resources of the American taxpayers".<sup>21</sup> A variety of speculative arguments would be possible concerning why the United States gave foreign aid to Japan.

Over the period from 1946 to 1951, Japan was granted approximately 2 billion dollars foreign aid by the United States. These grants consisted of (1) GARIOA (Government Account for Relief in Occupied Area) fund, (2) EROA (Economic Recovery of Occupied Area) fund, and (3) the administrative expense account for the U. S. forces stationed in the occupied area. The following tables show the U. S. foreign aid budget for Japan and its realized expenditures.

Table 1 - 15

THE U. S. FOREIGN AID BUDGET FOR JAPAN

unit: million U. S. dollars

Year*	GARIOA	EROA	Administ.	Total
1946.....	93	--	--	93
1947.....	287	--	13	300
1948.....	351	--	20	371
1949.....	426	97	26	549
1950.....	237	188	19	444
1951.....	183	--	15	198
Total.....	1,577	285	93	1,955

\* U. S. fiscal year (June to July)

Source: Economic Planning Agency, A Postwar Economic History of Japan Vol. V, Tokyo: Economic Planning Agency, 1962, pp.136 - 37.

21.

Jerome B. Cohen, Japan's Postwar Economy, Bloomington, Indiana: Indiana University Press, 1958, p.111.





Table 1 - 16

THE REALIZED EXPENDITURES OF THE AID  
unit: million U. S. dollars

Year	Total
1945 and 1946.....	192
1947.....	404
1948.....	461
1949.....	519
1950.....	357
1951.....	151
Total.....	2,086

Source: same as the table above.

Japan must export in order to pay for imports, but in the immediate postwar period her exports were much less than her imports, the difference having being paid for by the U. S. foreign aid. Japan's balance of payments in these years is described in the table below.

Table 1 - 17

BALANCE OF PAYMENTS IN THE IMMEDIATE POSTWAR PERIOD  
unit: million U. S. dollars

	1946	1947	1948	1949	1950	1951
Goods and services.....	-272.6	-358.4	-386.8	-306.4	72.1	158.2
Donations.....	194.5	404.8	461.6	413.5	403.4	170.9
Money, gold and capital.....	-80.6	60.0	101.7	196.2	-458.8	-337.7
Total balance..	-158.7	106.4	176.5	403.3	16.7	-8.6

Source: International Monetary Fund, Balance of Payments Yearbook 1949 - 1950, Washington: I.M.F., 1951.

It is clear from the above table that during the five years in the immediate postwar period more than half of Japan's imports were financed through U. S. foreign aid.



The combined effect of measures for monetary and financial stabilization and the inflow of foreign aid was markedly reflected in the index of industrial activity which recovered to 88.0 in 1950 as against 100 of the period 1932 -36.

One of the most decisive events in the process of the economic rehabilitation was the outbreak of the hostilities in Korea in June, 1950. The U. S. foreign aid, which was substantially reduced during 1951 and eventually abolished in 1952, promptly gave way to other sources of foreign exchange revenue when the special procurement program for the United Nations forces in Korea was started. Sales of goods and services to military personnel stationed in Japan and also sales to UN forces under the special procurement program in connection with the Korean war, markedly increased from 153.7 million dollars in 1950 to 625 million dollars in 1951, creating 331 million dollars net surplus in Japan's balance of payments in 1951. Although the so-called "Korean boom" was accompanied by a somewhat undesirable side effect, viz. recurrence of inflation, its contribution to Japan's economic recovery was unquestionable.<sup>22</sup>

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22.

"During one year from 1950 to 1951, wholesale prices increased by 56.3 per cent, while retail prices in the same period rose by 36 per cent." (Shoichi Mizuno, op. cit., p.25 ) Professor Miyoei Shinohara, however, argues that the price rise during this period was not very much due to an inflation proper, but rather a reflection of a "catching-up effect" of yen to dollar. (Miyoei Shinohara, Growth and Cycles of Japanese Economy, Tokyo: Sobunsha, 1961, p.382 ). The catching-up effect of domestic prices to foreign prices and other related matters of foreign exchange rate will be elaborated in Chapter IV of this thesis.





The restoration of Japan's sovereignty in 1952 had a favorable psychological effect upon the economic activities of the nation; Japan's balance of payments in 1952 was almost normal, though the weight of special procurement was still high, with nearly one billion dollar foreign exchange reserve; the relics of wartime control, such as price regulation and ration systems, had been virtually eliminated by 1952 except for a very few items such as rice; and the per capita gross national product in 1952 finally outstripped that of 1935. On the basis of these considerations, one may now conclude that the economic rehabilitation of the postwar Japan was virtually accomplished by 1952.



## CHAPTER II

### SOME CONSIDERATIONS OF DEMAND CONDITIONS

The purpose of this chapter is two-fold. First, an attempt will be made to examine statistically one of the characteristic features of postwar Japanese economic development in the context of an international comparison of components of gross national expenditure and the growth of these components over time. On the basis of statistical findings a proposition will be put forward that one of the most striking features of Japanese economic expansion was the high rate of growth in domestic capital formation in the private sector of the economy. Second, an inquiry will be made into some probable factors which might have contributed to the rapid expansion of private sector investment.

#### A. A Statistical Break-Down of Components of Gross National Expenditure

National income, when viewed from the production side, may be defined as the sum of incomes accruing within a year to the factors of production supplied by the residents of a country, before deduction of direct taxes; it is, therefore, equal to the sum of wages and salaries of employees, income from unincorporated enterprises, rents, interests and dividends accruing to households, net



corporate savings, direct taxes on corporations and government income from property and productive activities. Gross national product at factor costs is equivalent to national income plus depreciation allowances; and it differs from gross national product at market prices by exclusion of the excess of indirect taxes over subsidies. Gross domestic product is equal to gross national product less net factor incomes received from abroad. If we view gross national product at market prices from the expenditure side, it may be defined as the sum of private consumption expenditure, general government expenditure, gross domestic capital formation, increase (or decrease) in inventories, and exports of goods and services less imports of such items. Aside from details of statistical techniques of national income measurement, it would be said that the choice between the two concepts, i.e., GNP viewed from the production or income side and GNP defined as the sum of total national expenditures is arbitrary. The choice depends upon the purpose of analysis. In what follows the latter concept will be used.

Table 2 - 1 represents the percentage distribution of expenditures on gross national product with respect to five industrial countries during the period from 1952 to 1961.

It is clear from Table 2 - 1 that in the case of postwar Japan, the ratio of domestic capital formation to gross national expenditure steadily increased and eventually came to take up more than one-third of GNP in 1961. It could be said that it is an unusual phenomenon for a country operating under a free enterprise system to devote only 51 per cent of its spending potential to private consumption expenditure while achieving gross domestic capital





formation constituting 36 per cent of GNP.

Table 2 - 1

EXPENDITURE ON GROSS NATIONAL PRODUCT:  
AN INTERNATIONAL COMPARISON

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
<b>CANADA</b>										
Priv. con.	60.3	61.3	64.2	63.5	60.4	61.7	63.5	63.9	64.3	65.4
Gov't con.	14.5	15.8	14.8	14.3	13.8	13.8	14.0	13.8	14.3	15.1
G.D.F.C.F.*	21.2	22.5	23.7	22.3	25.2	26.6	25.2	23.6	22.3	21.8
Invent.	2.0	2.0	-0.9	0.9	3.4	0.6	-1.2	1.0	0.7	-0.4
Exports	22.1	20.5	19.8	20.4	20.0	19.2	18.5	18.4	18.6	20.4
Imports	-20.1	-21.1	-20.2	-21.4	-22.7	-21.9	-20.1	-20.7	-20.2	-22.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>GERMANY (W)</b>										
Priv. con.	58.3	59.6	58.5	57.1	57.8	58.0	58.6	57.4	56.3	56.9
Gov't con.	16.0	15.1	14.7	13.9	16.2	13.4	14.1	14.2	14.3	14.1
G.D.F.C.F.	19.1	20.1	21.0	22.9	22.8	21.8	21.9	23.0	24.0	25.0
Invent.	4.2	1.4	2.2	3.4	2.2	2.5	1.4	1.8	2.2	1.7
Exports	16.9	17.8	19.9	20.6	22.4	24.4	23.8	24.1	24.8	23.1
Imports	-14.5	-14.1	-16.2	-17.8	-18.7	-20.1	-19.8	-20.5	-21.7	-20.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>JAPAN</b>										
Priv. con.	60.0	61.3	63.4	61.8	58.7	58.6	60.4	55.5	53.6	51.0
Gov't con.	11.1	10.8	11.3	10.5	10.2	9.8	10.2	9.4	8.7	9.1
G.D.F.C.F.	20.3	22.0	19.8	18.6	24.0	27.1	26.6	27.0	31.3	36.3
(Private)	(14.2)	(14.2)	(12.0)	(11.2)	(17.1)	(19.9)	(18.3)	(18.1)	(22.0)	(26.4)
Invent.	7.0	6.0	3.3	7.1	7.9	4.6	-0.5	6.4	5.6	9.0
Exports	13.5	12.9	12.8	13.2	13.6	13.7	13.0	12.7	12.6	11.9
Imports	-12.0	-12.9	-10.7	-11.2	-14.3	-13.8	-10.8	-11.0	-11.8	-17.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

\*G.D.F.C.F. stands for gross domestic fixed capital formation and includes residential housing.

Source: United Nations, Yearbook of National Accounts Statistics, 1959 and 1962. New York: United Nations, 1960, 1963.



	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
<hr/>										
<u>U.K.</u>										
Priv. con.	67.4	67.4	67.5	67.6	66.0	65.4	66.5	67.1	66.3	64.6
Gov't con.	19.1	18.9	18.1	17.3	17.5	17.1	17.1	17.0	17.0	17.3
G.D.F.C.F.	19.2	13.7	14.2	14.7	15.3	15.4	15.4	15.6	16.3	16.8
Invent.	0.3	0.7	0.3	1.6	1.3	1.7	0.2	0.7	2.4	1.0
Exports	22.8	20.2	20.2	20.7	21.1	20.9	19.2	20.4	20.5	20.1
Imports	-22.5	-20.6	-20.3	-21.8	-20.1	-20.4	-18.4	-20.8	-22.4	-20.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
 <u>U.S.A.</u>										
Priv. con.	62.4	62.7	64.6	63.8	63.5	63.4	65.3	64.0	64.2	63.7
Gov't con.	20.2	20.3	18.8	17.4	17.5	18.1	18.9	18.3	18.3	19.0
G.D.F.C.F.	15.8	16.0	16.5	17.1	17.6	17.4	16.4	16.7	16.4	15.8
Invent.	1.3	1.2	0.1	1.9	1.0	0.3	-0.5	1.4	0.8	0.4
Exports	4.7	4.1	4.3	4.4	5.0	5.4	4.6	4.3	4.8	4.6
Imports	-4.4	-4.4	-4.4	-4.5	-4.6	-4.6	-4.6	-4.6	-4.5	-4.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<hr/>										

The table also indicates that the increasing share of gross domestic capital formation, in the case of postwar Japanese economy, was primarily due to growing private investment activities. It is generally believed that investment by the private sector is of a less autonomous nature, usually associated with the trend of effective demand for final goods.

While interpreting the above table, one question comes to mind since the original figures in Yearbook of National Accounts Statistics are given in current prices; vis., the changing proportion of the components of GNP might also be reflecting different rates of price changes for various groups of commodities. If, for example, prices of capital goods are rising faster than prices of consumer goods, the statistical presentation above could be deceiving. Under such circumstances, an increasing rate of capital formation relative to GNP would also represent an inflated value of capital goods relative to





that of consumer goods. Apparently, the figures for Japan in the above table are distorted to a certain extent, because of the changes in prices which did not uniformly affect prices for all commodities. This difficulty in the case of postwar Japan, however, does not seem to weaken the basis of the argument that the share of capital formation steadily increased, because prices of consumer goods rose at a rate higher than prices of capital goods during the period under review. The consumer good price index rose from 93.1 in 1953 to 107.0 in 1961 while the same index for capital goods changed from 104.4 in 1953 to 109.5 in 1961, both as against 100 in 1955.<sup>1</sup>

An international comparison of the components of GNP does not tell much about the growing trend of the gross domestic capital formation. From Table 2 - 1 one can only infer that the percentages of capital formation increased relative to the total value of GNP.

As a supplement to the above results, therefore, an international comparison is made in regard to the growing trend of components of GNP in terms of index numbers. Although it is more desirable to perform such a comparison with respect to the five countries represented in Table 2 - 1, only Germany(W) and Japan will be considered, because among the countries represented, Germany(W) alone achieved a rate of GNP growth comparable to that of Japan.

Index numbers of GNP, gross domestic capital formation,

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1.

Economic Planning Agency, National Income White Paper 1961. Tokyo: Economic Planning Agency, 1963.



and private consumption are computed in Table 2 - 2 with respect to Germany(W) and Japan during the period from 1953 to 1961, using 1953 as the base year. Government expenditure and foreign trade balance are excluded because of the lack of comparable statistical data. In addition, export surpluses as the net contribution to the effective demand are negligible, especially in the Japanese economy. Even in the case of Germany(W), which is generally regarded as a country with an extremely favorable trade balance, export surpluses did not exceed 4 per cent of GNP on the average during the period under review. Strictly speaking, the following index numbers are not comparable, because; (1) original German figures are given in current market prices while for Japan they are expressed in constant price of 1955, and (2) the figures for gross domestic capital formation in Japan are broken down into public and private sectors, but those for Germany(W) are not. The first problem, however, does not seem to present any serious difficulty, because the value of Deutsch Mark was relatively stable during this period. The rise in industrial wholesale prices in Germany(W) did not exceed 1 per cent per annum from 1953 to 1960 and 2 per cent from 1960 to 1961. The consumer prices in the same country were also relatively stable during these years with an annual rise slightly above 1 per cent.<sup>2</sup> The second problem occurs solely due to the limitation of availability of statistics. German figures do not conform with the system of United Nations' national income accounts which require to break down gross domestic

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2.

International Monetary Fund, International Financial Statistics, December 1963. Washington: I. M. F., 1963, p.118





capital formation into private enterprises, public corporations, government enterprises, and general government undertakings.<sup>3</sup>

In spite of these limitations, however, the following statistical exercise would serve the purpose at least to single out one of the characteristic features of the postwar Japanese economic development.

Table 2 - 2

GROWTH TREND OF COMPONENTS OF GNP:  
A COMPARISON OF GERMANY(W) AND JAPAN

	1953	1954	1955	1956	1957	1958	1959	1960	1961
<u>JAPAN</u>									
G. N. P.	100	103	114	123	135	135	159	180	209
Priv. con.	100	103	110	119	125	132	142	154	168
G.D.F.C.F.*									
Public	100	102	107	108	122	143	181	212	264
Private	100	104	100	146	193	205	244	345	452
<u>GERMANY(W)</u>									
G. N. P.	100	108	123	136	148	157	171	191	207
Priv. con.	100	106	118	131	143	154	164	191	208
G.D.F.C.F.	100	112	139	153	159	170	194	227	242

Note: \*G.D.F.C.F. stands for gross domestic capital formation, and includes residential housing.

Sources: Economic Planning Agency, National Income White Paper 1961, Tokyo: Economic Planning Agency, 1963. and United Nations, Yearbook of National Income Accounts 1959 and 1962, New York: United Nations, 1960, 1963.

The index numbers in the above table are plotted in Figure 2 - 1.

<sup>3</sup> For details of the U. N. system, see United Nations, Yearbook of National Accounts Statistics, "Conceptual Framework", and "Definitions of the Items in the Standard Tables", which appear in any year's issue.



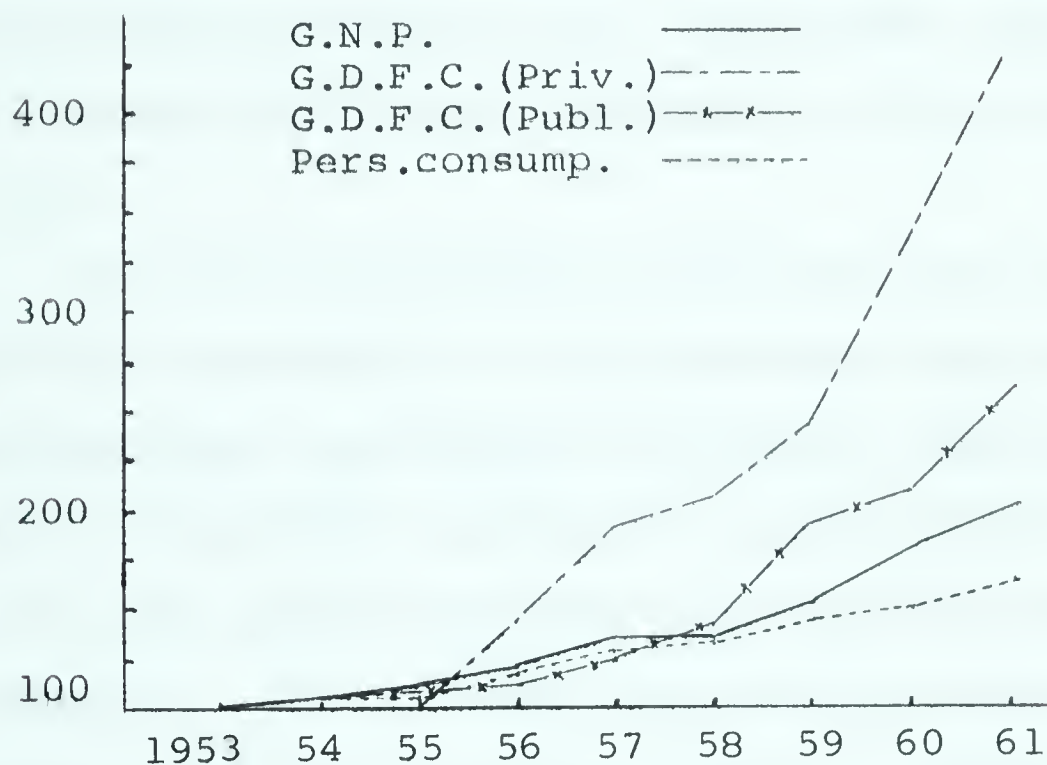


It now should be obvious that the postwar economic growth of Japan was steadily sustained by an extraordinary expansion of private sector investment.

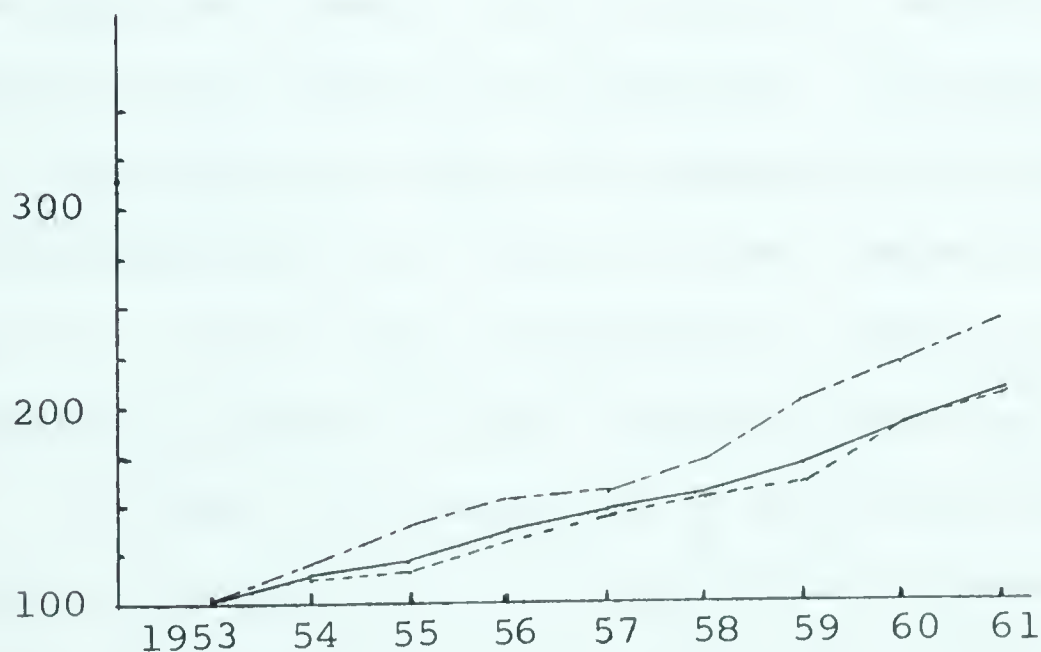
Figure 2 - 1

GROWTH TREND OF COMPONENTS OF GNP:  
A COMPARISON OF GERMANY(W) AND JAPAN

JAPAN



GERMANY (W)



Source: Table 2 - 2.



B. The Basis of Entrepreneurial Optimism

The statistical investigations which have preceded this section, seem to lead to an inescapable question; why were the Japanese entrepreneurs so keen to expand their productive capacity? Presumably, the Japanese entrepreneurs are rational human beings. They invested because they believed that their investments would be rewarding eventually; and as a matter of fact, such investment must have been reasonably rewarding so far. Otherwise, major Japanese firms which financed substantial investment outlays would have gone bankrupt by now!

It would be possible to describe the sequence of entrepreneurial decision-making in the following simplified manner. First, an entrepreneur, considering investment, would estimate an expected amount of sales of his products which would be increased in quantity when the investment under consideration creates additional productive capacity. Whether newly added products find a favorable prospective market would be his prime concern. Second, with such an estimation of expected demand, the entrepreneur would give a thought to his current rate of capacity utilization. If there exists large idle capacity currently, his plan for expansion of plants and equipments would be restricted to a certain extent depending on the size of idle capacity. Under such circumstances, output could increase with no appreciable change in fixed capital formation.<sup>4</sup>

In short, the source of an entrepreneurial willingness to invest ultimately stems from estimates of demand considera-

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4.

Highly autonomous investments such as expenditures in research projects are disregarded.





tions and the actual investment in fixed assets, among other things, depends upon the current rate of capacity utilization. The purpose of this section, as already implied, is an examination of the postwar demand situation which is believed to have generated an extraordinary kind of willingness to invest among Japanese entrepreneurs. Before going into details, however, it would be appropriate to have a glance at the statistical evidence indicating that the rate of capacity utilization in the postwar period was rather high on the average.

Table 2 - 3

RATES OF CAPACITY UTILIZATION AND INDEX

	1955	1956	1957	1958	1959	1960	1961
Rate.....	74.7	79.5	80.1	70.2	79.7	85.5	85.5
Index.....	100.0	106.4	107.2	94.0	106.7	114.5	114.4

Note: The rate of capacity utilization of manufacturing industries, originally compiled by the Ministry of International Trade and Industry of the Japanese Government, is a percentage ratio of the capacity currently utilized to the designed capacity.

Sources: Economic Planning Agency, Economic White Paper 1959, 1960, 1961 and 1962. Tokyo: Economic Planning Agency, and Osamu Shimomura, Shigeto Tsuru, et., al., Growth Potential of Japanese Economy, Tokyo: Kinyu Zaisei Jijo Kenkyu Kai, 1959. p.133.

Productive investments create additional supply capacities which are expected to be met by sufficient effective demand. Sources of effective demand could be classified into the following categories; (1) external demand, (2) domestic demand for capital goods, and (3) domestic demand for consumer goods. The role of



external demand, as already implied in Section A of this chapter, was not particularly significant as a source of effective demand supporting the postwar investment boom in Japan, though the importance of exports as a main foreign exchange earner can hardly be denied. It is often pointed out that during the postwar period the Japanese economy underwent a remarkable structural change from an economy with a relatively heavy emphasis on light industries to one specializing to a greater extent in the production of chemicals and heavy industrial goods; but, while the proportion of chemicals and heavy industrial goods in the total production of manufactured goods in Japan reached a level comparable to that in the advanced western countries, their relative importance in manufactured exports remained low. As shown in the following table, the so-called "estrangement co-efficient" of domestic production and exports are considerably lower in chemicals and heavy industrial goods.<sup>5</sup> It can be said, therefore, that the growth segments of the economy were not greatly influenced by external demand conditions.

Additional evidence to show that external demand did not play a significant role as a source of effective demand is that the demand effect of exports was largely offset by the leakage effect of imports which increased almost at the same rate as exports. In the postwar period the Japanese economy did not create export surpluses which were sufficient enough to be regarded as a significant net contribution to effective demand.

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5. This awkwardly christened co-efficient is one of the inventions of Economic Planning Agency staffs. Although the concept itself is extremely simple, this co-efficient seems to have quite impressed some foreign observers of the Japanese economy, apparently because of its high-flown name. See, for example, The Economist (London), September 7 and 14, 1962.





Table 2- 4

STRUCTURE OF EXPORT AND PRODUCTION OF MANUFACTURED GOODS

(in percentages of total exports or total production of manufactured goods)

	1935	1950	1955	1959
Exports (A)				
Chemicals and heavy industrial goods.	18	33	42	47
Chemicals.....	4	2	5	5
Metals.....	7	20	22	13
Machineries.....	7	11	15	29
Light industrial goods.....	82	67	58	53
Production (B)				
Chemicals and heavy industrial goods.	53	50	53	64
Chemicals.....	20	15	14	13
Metals.....	19	19	21	22
Machineries.....	14	16	18	29
Light industrial goods.....	47	50	47	48
Estrangement co-efficient (A/B)				
Chemicals and heavy industrial goods.	0.4	0.7	0.8	0.8
Chemicals.....	0.2	0.1	0.4	0.4
Metals.....	0.4	1.1	1.0	0.6
Machineries.....	0.5	0.7	0.9	1.0
Light industrial goods.....	1.7	1.3	1.2	1.4

Note: Processed foodstuffs are excluded from the above computation  
Sources: Economic Planning Agency, Economic White Paper, 1961  
Tokyo: Economic Planning Agency, 1961, p. 309, and United Nations, Economic Survey of Asia and the Far East, 1962, New York: United Nations, 1963. p. 120.

Investment expenditures, while having the capacity creating effect on the one hand, are equally important as a source





of effective demand on the other. The relative importance of domestic market grew in the post-war period, and within that change the share of investment increased remarkably. In the post-Keynesian version of growth theory, investment is regarded as a two-sided actor on the economic scene. The simultaneous performance of investment as an income-generator and capacity-creator is the basis of modern growth theory. However, it seems possible to find a third role in investment, and according to Albert O. Hirschman, this third role of investment in economic development "plays even on top of the other two."<sup>6</sup> Following Hirschman's original terminology, we shall call it the role of a pace-setter for additional investment.<sup>7</sup> An initial expansion in one sector of an economy could cause various repercussions in other sectors of the economy. Since no sector in the economy is perfectly self-sufficient in terms of factor inputs, the capacity expansion in one particular sector would necessarily generate effective demand for the sectors supplying input factors to the expanded sector. An increase in production of commodity A, for example, would require more production of commodity B or others because of high technical complementarity. Furthermore, it may lower the average cost of producing C on condition that C is a technical substitute for commodity B. Thus, investment in the production of A sets up strong pressures for an increase in the production

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6. Albert O. Hirschman, The Strategy of Economic Development, New York: Yale University Press, 1959, p. 40.

7. Ibid., p. 41.



of B and at the same time strong incentives for the establishment of C industry. This seemingly apparent "chain reaction" of investment, however, did not receive a proper attention of economists in spite of its significant role in the process of economic development; and the reason for such a negligence, according to Hirschman, can be ascribed to the fact that in advanced economies, with which most economists used to be concerned, the sequences of such a chain reaction are expected to take place automatically and almost instantaneously; and also that with a complete universe of commodities already in production, the necessities aroused or opportunities opened up by additional investment result only in marginal adjustment in outputs from existing capacity<sup>8</sup>

In the postwar development of Japanese economy the complementarity effect of investment was clearly observed. The Economic Planning Agency, in one of its annual economic surveys, described this phenomenon by the expression "investment calls for investment".<sup>9</sup> Professor Shigeto Tsuru points out the following six major industries which are believed to have been especially noteworthy in terms of their complementarity effects on other industries; electrical and electronic equipments, automobiles, plastics, petro-chemicals, synthetic fibers and atomic power. The ratio of fixed investment in these industries to total fixed investment in manufacturing as a whole steadily increased during the period

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8. Ibid., p. 43.

9. Economic White Paper 1962, p. 27.





from 1954 to 1959; namely, 15.4 per cent in 1954, 14.9 in 1955, 22.5 in 1956, 27.8 in 1957, 31.8 in 1958 and in 1959 the ratio reached a high mark of 34.9 per cent.<sup>10</sup>

One of the conditions required in order for the complementarity effect to work out successfully, as Hirschman points out, is the absence of a complete universe of all products the supply elasticity of which is large. If, for example, there is a huge surplus in the supply capacity in some complementary industry, such an industry is very likely to absorb the shock wave of the initial expansion and fail to transmit the wave to others. Thus, the circle of complementary effect is cut off at that stage. In the case of postwar Japan, however, there was ample evidence to suggest that most industries were operating at a rate close to full capacity. In some extreme cases such as the machinery industry, for example, in the last quarter of 1956 and in the second quarter of 1957 the rate of capacity utilization was 101.1 and 108.3, respectively.<sup>11</sup>

The economic significance of the complementarity effect of investment is that investment can expand within a set of interrelated sectors before linking up with the final consumption. This might indicate that such investment is of highly autonomous nature, i.e., independent of income or consumption.

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10.

Shigeto Tsuru, "Growth and Stability of the Postwar Japanese Economy" The American Economic Review, May 1961, Papers and Proceedings, p. 408.

11.

Osamu Shimomura, Shigeto Tsuru, et. al., op. cit., p. 133. An economy in which complementarity effect is in full swing always confronts some possibilities of appearance of bottleneck sectors. When imports of certain capital goods are re-



This argument, however, would be valid only in a very short-run sense.<sup>12</sup> No matter how indirectly the initial investment and all other interrelated investments are linked with final consumption, sooner or later increased productive capacities of these industries have to be met by effective demand of final consumers. The growth which is solely created by the complementarity effect of investment might last for a while, but would not for long. Indeed, the appraisal of the postwar Japanese economy splits at this very point. Pessimists are full of anxiety that the period of growth would not last for long, because the enormously expanded productive capacities would not find appreciable effective demand of final consumers, and that the economy would have to slacken its pace of growth when a circle of the complementarity effect is completed. Optimists, on the other hand, argue that in view of the current standard of living of the Japanese, which is still considerably lower than that of those western advanced countries, there are yet huge frontiers of the effective demand of final consumers. During the inventory recession from the second quarter of 1957 to the first quarter of 1958, the pessimist side of the argument seems to have been dominating the economic journalism in Japan. However, when the economy regained its spurt towards the middle of 1958 and enjoyed a continued high rate of expansion until the end of 1963, with a slight dip of inventory recession

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stricted, this possibility is especially high. In 1956 and 1957 the steel industry apparently became a serious bottleneck; and a sudden increase in imports of steel products caused a foreign exchange crisis in the latter half of 1957.

12.

See, for example, United Nations, Economic Survey of Asia and the Far East, 1961. New York: United Nations, 1962, p. 67.





in the last quarter of 1962, the optimism seems to have gained its strength. When the economy recovered from the 1957-58 recession, many Japanese economists shared this feeling: ". . . what turns out to be over-investment in the sight of man, may not be over-investment in the sight of God."<sup>13</sup> It now appears that an adequate answer to the question of whether the postwar Japanese economy experienced "over-investment" or not might be found in an examination of the consumer demand situations.

Before going into the detailed analysis of consumer demand, we shall have a brief glance at the average propensity to consume of the Japanese in the postwar period. The available statistical data indicate that the average propensity to consume, which is defined as the ratio of personal consumption expenditure to personal disposable income, was relatively stable with a value in the neighborhood of 80 during the postwar period.<sup>14</sup> This figure is not particularly striking when compared with those of other industrial countries. The data are also indicative that the heavy gross domestic savings, which can be clearly read off from Table 2 - 1, largely originated in corporate savings rather than in personal savings. Furthermore, the relatively stable average propensity to consume during the postwar period does not seem to conform with the typical Keynesian consumption function. During the postwar period the increase in per capita disposable real income was remarkable; and yet such an increase

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13. P. Streeten, "Unbalanced Growth", Oxford Economic Papers, June 1959, p. 188.

14. Economic Planning Agency, National Income White Paper 1961, Tokyo: Economic Planning Agency, 1963.





did not affect the average propensity to consume. It appears that the consumption function of the Japanese during this period continually shifted upward. However, it is not the purpose of this chapter to develop a consumption theory on the basis of statistically testable hypotheses.

It is indeed an arguable hypothesis to define consumption solely as the function of disposable income. Even in a quite intuitive sense it seems agreeable to assume that the consumption-saving decision of an individual consumer is under the forces of a set of variables other than disposable income. The postwar consumption function controversy among U.S. economists repeatedly referred to this fact. Among numerous contributions brought about through this controversy, one of the most outstanding would be that of James S. Duesenberry.<sup>15</sup> Duesenberry suggested introducing a new independent variable in the consumption function and attempted to define the consumption behavior of an individual consumer as a function of disposable income and a psychological variable which he named the demonstration effect of consumption. Thus, the independent nature of consumer behavior which had been assumed in the typical Keynesian consumption function was replaced with that of interdependence. The gist of the Duesenberry hypothesis would well be described by the following quotation:

"Consider two groups with the same incomes. One group associates with people who have the same income as they have. The other group associates with people who have higher incomes than the mem-

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15.

James S. Duesenberry, Income, Saving and the Theory of Consumer Behavior, Cambridge: Harvard University Press, 1949.



bers of that group. The expression  $\sum \alpha_{ij} C_j$  will have a greater value for the second group than for the first (where  $C_j$  is consumption of the  $j$ th individual and  $\alpha_{ij}$  is the weight applied by the  $i$ th consumer to the expenditure of the  $j$ th). The two groups have the same income but the first will be better satisfied with its position than the second.<sup>16</sup>

The frequency of contacts with higher income consumers would be an important determinant of the consumption behavior of an individual consumer. The more frequently he associates with those of higher expenditure and the wider the gap between his own current level of consumption and those of the others, the larger proportion of his disposable income would be spent on consumption in spite of the fact that his real disposable income remains the same.

The Duesenberry theory of consumption function is essentially concerned with the consumption behavior of an individual. However, it appears feasible to apply this notion to the consumption behavior of a nation as a whole; and such an attempt was actually made by Ragnar Nurkse.<sup>17</sup>

"I should like here to draw upon a theory put forward in a recent book by James S. Duesenberry. I believe that this theory, which in its original form relates to individual consumers, has some explanatory significance on the international plane also."<sup>18</sup>

According to Nurkse, the consumption level of a country is likely to be influenced by the consumption pattern of those with higher

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16. Ibid., p. 48.

17. Ragnar Nurkse, Problems of Capital Formation in Underdeveloped Countries, Oxford: Basil Blackwell, 1958.

18. Ibid., p. 58.





per capita expenditure. The consumption decision of a nation in relatively backward stages of economic development would be under the influence of forces many of which are possibly different from those usually at work in a more mature economy. The nations of the world belong to different stages of economic development, yet they do not live in isolation. On the contrary, the frequency with which peoples of different plateaus of consumption are in contact with each other is increasingly great. New ways of communication and speedy means of transportation directly and indirectly invite continual association between the peoples of different plateaus of consumption. Inevitably there occurs the "invidious comparison" of the two standards of living. To the extent that the attainment of better living is accepted as a social goal, very often this comparison is translated into actual desires to catch up with higher planes of living of the advanced countries. In this case, consumption of those nations in backward stages of economic development would be highly emulative.

The spread effect of international demonstration would be largely determined by the following situations: (1) the literacy rate of a nation, (2) the extent of development of mass-communication systems of the country, (3) people's attitude toward changing patterns of consumption, (4) presence or absence of religious and social inhibitions which might prevent the inhabitants from adopting new way of living, etc. It should be noticed clearly, however, that the international demonstration



effect is not necessarily a direct determinant of actual consumption level. It rather determines the level of consumer aspiration.

The original intention of Nurkse's elaboration of the international demonstration effect, however, was to show that such an effect would adversely affect the economic development of underdeveloped countries. By proposing a theory of international demonstration effect, Nurkse attempted to ascribe one of the probable causes of relatively low level of domestic capital formation in underdeveloped countries to the fact that people in those countries have a tendency to live beyond their means because of the forces of international demonstration effect, thus chronically running deficits in their balance of payments and neglecting the task of the internal finance of domestic capital formation. Nurkse states, for example, that "advertisement is the art of creating new wants, and Americans are supremely good at it; no wonder the rest of the world has a dollar shortage!"<sup>19</sup> In this chapter, however, the Nurksian theory of international demonstration effect will be used for an explanation of somewhat different phenomena.

In order for the demonstration effect to determine the actual level of consumption of a nation, there would have to be an important assumption; the absence of import restrictions on consumption goods. If there exists the import restriction on such items, the desire created through international demonstration effect would not necessarily result in actual consumption

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19.

Ibid., p. 62.





of such goods which might otherwise be imported. In this context two possible cases can be discussed: first, the country is able to produce domestic substitutes for import goods which are desired due to an international demonstration effect; and second, the country is not capable of producing such substitutes. In either case people in that country would not be genuinely satisfied. The former case would probably witness frustrated consumers reluctantly being satisfied with domestic substitutes; and, in the latter case, the import restriction of those items would become increasingly difficult. It appears that the case of the postwar Japanese economy typically falls in the former category.

It has been pointed out that whether attraction of advanced living standard is an obstacle to the late-comers in economic development is subject to a careful consideration. With no substantial supply of domestic substitutes for "attractive" consumer goods associated with higher standards of living in foreign countries, and with no effective import restriction of these goods, a late-comer would probably confront serious problems of over-expenditure in imported "luxuries" and of shortage of domestic savings required for capital formation. Certainly, Japan was one of the late-comers in economic development, though the lateness in her case does not carry exactly the same meaning as interpreted by Ragnar Nurkse. During the postwar period in Japan there were strong forces of international demonstration effect at work; and a sustained pressure of demand for "attractive" consumer goods was cumulatively intensified through





the development of international mass-media. There would be no doubt that these forces created highly emulative demand among Japanese consumers; and it would be no exaggeration to state that the so-called American way of living represented a goal to be attained for the average Japanese consumers. At least in the case of the postwar Japanese economy, however, these forces did not adversely affect the economic development due to the following probable reasons. First, there was an effective foreign exchange control by the Government so that the country could avoid being flooded with imported consumer goods.<sup>20</sup> Second, Japan was potentially capable of supplying these goods domestically. The technological standard of the Japanese was such that they could manufacture these goods if they introduced essential patents and know-how from advanced countries.<sup>21</sup> Restrictions imposed upon imports of desired goods created a strong incentive among Japanese entrepreneurs to establish new industries; and patents and know-how associated with such industries were introduced from technologically more advanced countries under licensee agreements. Thus, to a certain extent, "a sustained pressure of demand could overcome, in course of time, all kinds of obstacles to an increase in output."<sup>22</sup>

Undoubtedly, there are almost insurmountable diffi-

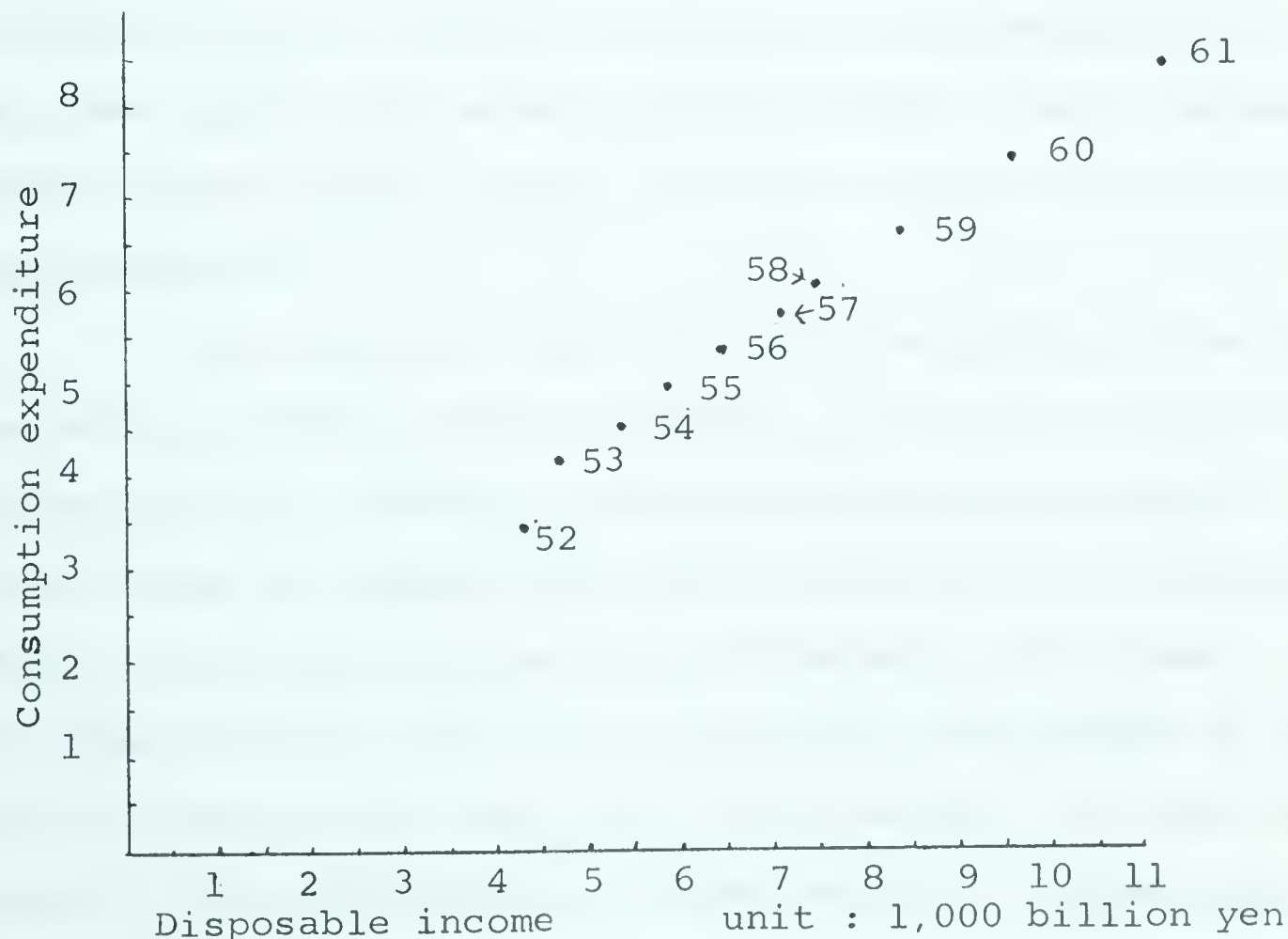
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20. Details of foreign exchange controls in the postwar Japanese economy will be discussed in Chapter IV of this thesis.
21. Technology and other related problems are the subjects of Chapter III.
22. A.K. Cairncross, "International Trade and Economic Development," Economica, August 1961, p. 235.



culties in the measurement of such a variable as "emulative consumer demand" as distinct from "ordinary consumer demand." The concept itself is already highly qualitative rather than quantitative. An ex post quantitative analysis of consumer behavior would possibly be made through examining the marginal and average propensity to consume and also through analysing the figures appearing in national income accounts. In Figure 2 - 2 the time series data of personal consumption are plotted against the same data for personal disposable income. The correlation between the two variables is remarkably tight so that someone may be tempted to draw a hasty conclusion from the result.

Figure 2 - 2

TIME SERIES CONSUMPTION FUNCTION: 1952-1961



Source: Economic Planning Agency, National Income White Paper, 1961, Tokyo: Economic Planning Agency, 1963.





At least two theoretical interpretations of the results in Figure 2 - 2 are possible. First, the consumption was a linear function of disposable income going through the origin; therefore, the average propensity to consume and the marginal propensity to consume are identical over the relevant income ranges. This interpretation, however, does not sound feasible, since people would have to spend even with no disposable income. The second one is that the consumption function kept shifting upward over the period of time; therefore, each point in the diagram is relevant only to a particular period. In order to substantiate the second interpretation, one has to analyse the cross-section data of consumer behavior for each period. Unfortunately, such an attempt seems to be somewhat beyond the reach of this thesis. However, whichever interpretation be adopted, one simple fact remains unquestionably clear; increasing disposable income did not result in higher saving ratio during the postwar period.

We shall now turn into an examination of the data represented in national income accounts. As shown in Figure 2 - 1, in Section A of this chapter, personal consumption steadily increased during the period from 1953 to 1962 without being much influenced by cyclical fluctuations of business activities. Clearly from the data, the ratio of personal consumption to GNP declined relative to the same ratio of investment, but the interpretation of this phenomenon is a sheer matter of relativity. "The domestic market has, undoubtedly, been greatly enlarged by



an increase in personal consumption; but because of a much faster increase in investment, the relative importance of personal consumption has decreased."<sup>23</sup>

It would now be necessary to associate the above analysis with the basic proposition of this section, i e., the basis of entrepreneurial optimism. Entrepreneurs would probably base their consumer demand estimation on (1) the trend of past consumption which has been actually realized, and (2) consumers' aspiration level toward higher standard of living. If the former estimation alone is adopted, an entrepreneurial decision of plant expansion, etc., might be somewhat conservative. While on the other hand, if an entrepreneur perceives the prospective demand of consumer goods in terms of the current aspiration level of consumers, his decision would demonstrate more bullish characteristics. In this case the entrepreneur would be able to exploit the future market possibilities to the limit which will be set by future disposable real income of consumers. One of the yard-sticks with which to measure the current aspiration level of consumers would be the gap between the current actual consumption level of his country and that of advanced foreign countries. The international demonstration effect, of course, is assumed to be in full swing. Furthermore, it would be argued that the entrepreneur could strategically take advantage of the international demonstration effect. A foreign observer of Japanese advertisements would be surprised to find out an excessive

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23.  
United Nations, Economic Survey of Asia and the Far East, 1961, New York: United Nations, 1962. p. 73.





sort of "western look" in these advertisements. Although awkwardly Japanized English, German or French words in the brand names of new products are almost unnoticed every-day-life phenomena for the average Japanese, they should be indeed striking to unaccustomed eyes.

The aspiration level of Japanese consumers would remain high as long as western industrial countries are "advanced" countries for them in terms of material life; and entrepreneurs would keep taking advantage of consumers' yearning toward higher standard of living without encountering serious problems of marketing. How long such a trend would last certainly belongs to the world of speculation. However, it would be suggestive in this connection to compare per capita consumption level of Japan with that of western industrial countries with respect to some selected items.

Table 2 - 5

AN INTERNATIONAL COMPARISON OF PER CAPITA PHYSICAL CONSUMPTION

Years	U.S.A.	U.K.	Germany (W)	Italy	Japan
Per capita energy consumption (coal equivalent in kilograms)					
1955	7,768	5,000	3,272	741	740
1961	8,042	4,925	3,626	1,223	1,298
Motor vehicle in use (number of people per vehicle)					
1955	2.6	10.8	21.8	38.6	103.2
1961	2.4	7.0	9.2	16.9	44.4
Per capita consumption of steel (kilograms)					
1955	574	337	352	102	77
1961	488	357	490	220	274

Source: United Nations, Statistical Yearbook, 1962, New York: United Nations, 1962.





Per capita real income of these countries in 1960 are presented in the table below.

Table 2 - 6  
INTERNATIONAL COMPARISON OF PER CAPITA INCOME:  
1960

unit: U.S. dollar

U.S.A.	U.K.	Germany (W)	Italy	Japan
2,288	1,085	967	509	354

Note: Official exchange rates are used for conversion of each country's national currency into U.S. dollar.

Source: United Nations, Statistical Yearbook, 1961,  
New York: United Nations, 1961.

### C. Summary and Prelude to Chapter III

It has been discussed in this chapter that one of the most characteristic features of the postwar Japanese economic development was its high rate of capital expansion. An attempt was made to single out probable factors which are believed to have given rise to the so-called postwar investment boom in Japan. The basic theoretical proposition adopted throughout the analysis was a sort of acceleration principle in broader sense of the term; that is, the growing domestic effective demand was an important source of a continued capital growth. The domestic effective demand was broken down into two categories, namely, demand for capital goods and demand for final consumers' goods. The capital side of effective demand was analysed mainly in terms of the so-called complementarity effect of investment; and the tool used for an explanation for the growing consumer demand was the concept of inter-



national demonstration effect. No definite conclusion has so far been drawn as to the future outlook of the growth trend which might be predicted in the light of the above considerations. except for sporadic suggestive statements.

Finally, it appears appropriate to give some comments on the following question which might have already struck the mind of the reader of this thesis. How was it possible to reconcile an enormously high gross domestic saving with the relative stability of average propensity to consume which was not necessarily low throughout the postwar period? It seems to be relatively easy to answer this question. In the following table, distribution of national income by factors of production is depicted in percentage terms.

Table 2 - 7

PERCENTAGE DISTRIBUTION OF NATIONAL INCOME BY  
FACTORS

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Compensation of employees.....	45.7	47.7	50.0	48.3	49.1	50.4	53.0	61.0	50.3	51.0
Income from unincorporated enterprises.....	42.9	39.0	38.1	39.4	35.1	33.1	31.8	30.0	27.5	26.0
Income from properties.....	3.5	4.3	4.6	5.3	5.6	5.0	3.8	6.7	8.6	8.3
Savings of corporations.....	3.8	5.2	3.9	4.1	6.8	5.0	3.8	6.7	8.6	8.5
Direct tax on corporations.....	4.4	4.0	4.0	3.5	4.0	5.2	4.4	4.6	5.4	6.0
Government income.....	0.7	1.1	1.0	0.9	0.8	1.6	1.6	1.4	1.4	1.6
Interest on public debts.....	-0.7	-0.8	-0.8	-0.8	-0.8	-0.8	-0.9	-0.7	-0.6	-0.5
Interest on consumer debts....	-0.2	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Net Factor income from abroad.....	-0.2	-0.2	-0.5	-0.4	-0.5	-0.4	-0.4	-0.4	-0.4	-0.5
Total.....	100.	100.	100.	100.	100.	100.	100.	100.	100.	100.

Note: Original figures are given in current factor prices.  
Source: United Nations, Yearbook of National Accounts Statistics, 1959 and 1962, New York: United Nations, 1960, 1963.





The Table 2 - 7 clearly indicates the relatively low ratio of compensation of employees to total national income. It is a well-known fact that wage earners in general belong to the group of consumers with relatively high propensity to consume. Sectoral distribution of domestic savings is as follows:

Table 2 - 8  
SECTORAL DISTRIBUTION OF GROSS DOMESTIC SAVINGS

Year	(A)	(B)	(C)	(D)
1952 .....	21.7%	9.8%	47.3%	24.6%
1953 .....	22.8	15.7	29.1	22.5
1954 .....	29.7	11.2	32.8	17.1
1955 .....	29.7	11.8	37.0	14.0
1956 .....	28.3	17.1	34.6	20.2
1957 .....	26.3	14.8	32.3	19.7
1958 .....	40.7	11.6	45.5	23.0
1959 .....	29.3	16.1	38.1	19.2
1960 .....	28.0	18.9	37.0	22.6
1961 .....	26.3	15.9	33.2	21.4

Note: (A) = depreciation allowances, (B) = corporate savings, (C) = household savings, and (D) = Government savings. There are some statistical discrepancies between gross domestic savings and gross domestic capital formation. Such discrepancies are -16.0 per cent in 1958, -5.4 per cent in 1960 and +3.7 per cent in 1955, etc. Foreign savings are comparatively small in Japan; its percentage is smaller than the estimated statistical discrepancy of the total figures of saving and investment.

Source: Economic Planning Agency, National Income White Paper 1961. Tokyo: Economic Planning Agency, 1963.

While interpreting the above table, some scrutiny is required; the household sector includes unincorporated enterprises. In 1959, for example, about half of the household sector net savings were those by farmers and non-farm proprietors. Therefore, the true household savings actually represent much smaller percentage than these figures may indicate. In view of these statistics, it seems



possible to reconcile large domestic gross savings with not-so-high saving ratio of individual consumers; gross domestic savings originated mainly in depreciation allowances, corporate savings, government savings, and also savings by unincorporated enterprises. From this statement another question would probably branch out: How, then, have business sectors managed to save enormously while maintaining compensation of employees at a relatively low level? This question has to be answered in the light of wage systems and employment structure of the postwar Japanese economy; and this is the task of the chapter which follows immediately.



### CHAPTER III

#### SOURCES OF SAVINGS AND SOME CHARACTERISTICS OF INCOME DISTRIBUTION

Throughout the preceding chapter, it was revealed that a high rate of gross capital accumulation was one of the dominant characteristics in the process of the postwar economic expansion in Japan. As schematically shown in the familiar saving-investment income determination theory, planned investment exceeding intended savings would cause a demand-pull inflation while intended savings exceeding intended investments would exert a deflationary pressure on an economy. However, as far as we observe the phenomena by means of national income account data, it is impossible to detect whether or not an economy has experienced an inflation due to planned investment exceeding planned savings. This is naturally so, because in an ex post sense there is always accounting identity between actual savings and actual investment and the national income accounts are by their very nature merely systematic recordings of the ex post flows of various components of national income over a specified period of time.

In the national income accounts there is always a definitional identity between gross domestic capital formation and gross domestic savings, regardless of the absence or presence of inflation over a relevant period of time. In the flow of national income, savings are defined as that portion of income which is not spent on consumption and investments are those expenditures dedicated to purposes other than consumption. Therefore, the ex post identity of





savings and investment is a truism. In an ex ante sense, we may argue that if an economy wishes to invest within the limit set by available savings at a given price level, the economy would not risk the danger of a demand-pull inflation. This statement requires further elaboration if it is to be valid in a dynamic setting. Both savings and investments change over time. It has to be specified to which period of savings and investments the statement actually refers. The real cause of an inflation is an increase in effective demand meeting inelastic supply of physical goods. Suppose, for example, that there is an investment plan in a certain period of time. At the very beginning of this period savings are estimated as insufficient to cover the planned investment outlays. In this case the economy would run deficit, at least in the initial condition. Such a deficit in the finance of investment, however, would not necessarily cause an inflation. Whether the economy would experience an inflation ultimately depends upon the magnitude of physical supply elasticity. If the physical supply elasticity is infinite, the real income of the economy would increase initially by the amount of investment and subsequently through the multiplier effect and additional savings will be created out of increased income so that in an ex post sense intended savings would equal intended investment at the new higher level of real income.

While reviewing the economic expansion in postwar Japan, the questions which strike one's mind would be these:

(1) How did the economy manage to finance gross domestic capital formation which vastly expanded; (2) Where did the economy obtain the necessary savings to cover investment outlays? These questions may



be answered by means of further inquiry into; (1) presence or absence of inflows of foreign capital, (2) domestic sources of savings, and (3) some aspects of the process and structure of credit creation in the Japanese economy. The present chapter is an attempt to shed some light on these aspects of the postwar Japanese economic development.

Before going into detailed analysis of these problems, it would be appropriate to point out the fact that the high rate of capital expansion in postwar Japan was not accompanied by a serious inflation; and this simple fact is already indicative that gross domestic capital formation during the postwar period was financed by means of internally generated voluntary savings.

Table 3 - 1

WHOLESALE PRICES AND COST OF LIVING INDICES: 1953 - 61  
1958 = 100

	1953	1954	1955	1956	1957	1958	1959	1960	1961
Wholesale pri.	102	101	99	104	107	100	101	102	103
Cost of living	92	97	95	96	99	100	101	105	111

Source: International Monetary Fund, International Financial Statistics December 1963, Washington: I. M. F., 1963.

#### A. Inflow of Foreign Capital

It is apparent from every statistical evidence that foreign capital did not play any substantial role in the finance of gross domestic capital formation. During the postwar period there had been practically no appreciable voluntary foreign capital inflow until 1957. The absence of voluntary long-term foreign invest-





ments in Japan during these years may be attributed to two major reasons; (1) the Japanese economy was still considered by the majority of foreign investors as a poor risk, and (2) there existed highly restrictive foreign exchange controls under which remittance of income accruing to investments as well as withdrawals of the principal of investments in hard currencies were impossible. Although the Government enacted a new Foreign Investment Law in July 1959 in an attempt to facilitate voluntary investments by foreigners, the investors were yet entitled only to obtain "conditional approval" to remit their investment income overseas and to withdraw principal in hard currencies. Under this system, the Government retained the right to defer temporarily the remittance whenever Japan's balance of payments situation so required. In May 1961 another step toward the elimination of restrictive measures of remittance and capital withdrawals was taken when transfers between foreign investors of balances on Nonresident Yen Deposit Accounts were permitted. Investors who obtained a license or approval to acquire an equity investment with yen from a Nonresident Yen Deposit Account were able to have their income remitted and the principal credited to a Nonresident Yen Deposit Account and their yen balance with the Account could freely be exchanged with hard currencies at the official exchange rates. However, for completely free movements between Japan and foreign countries, investors had to wait until April 1964 when Japan's Foreign Exchange Control Law was finally abolished.<sup>1</sup>

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<sup>1</sup>. Japan moved to an Article Eight country in April 1964. Under this status, a country is not supposed to restrict imports or control foreign exchange for balance of payment reasons.



The balances of foreign capital over the period from 1957 to 1961 are illustrated in the table below.

Table 3 - 2

BALANCES OF LONG AND SHORT TERM  
FOREIGN CAPITAL: 1957 - 61  
unit: million U.S.dollars

	1957	1958	1959	1960	1961
Long term	-10	90	-27	1	174
Short term	-84	-125	182	676	456
Total balance	-94	-35	155	677	630

Source: Economic Planning Agency, Handbook of Economic Statistics Tokyo: Economic Planning Agency, 1963.

The proportion of these foreign investments to gross domestic capital formation was almost negligible, in the order of less than 5 per cent on the average, and even less than the statistical discrepancy between gross domestic savings and gross domestic capital formation.

## B. Sources of Domestic Savings

In the last page of Chapter II of this thesis, it was suggested that one of the causes of high gross domestic savings might be attributed to the fact that the share of compensations of employees in national income remained at a relatively low level. It was further suggested that gross domestic savings originated mainly in depreciation allowances, corporate savings, government savings, and savings by unincorporated enterprises.<sup>2</sup> This section

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<sup>2</sup> See pp.61 - 62 of this thesis.





attempts to develop these views by providing further statistical evidence to support the proposition that during the postwar period the circumstances were consistently in favor of capital rather than of labor in terms of income distribution. It is believed that throughout the period under review there existed a continued process of "ploughing back" of the nation's aggregate spending potential into capital accumulation and that this process was greatly promoted by the conditions which are believed to have been favorable to the returns to capital. This proposition will lead us to the necessity to investigate; (1) origins of gross domestic savings, (2) the relative share of compensation of employee class workers in national income, and (3) the structure of the labor market.

The United Nations data on national income accounts provide useful information concerning the sources of gross domestic savings of various countries. The means of financing gross domestic capital formation are classified, in these data, into three main categories; (1) provision for the consumption of fixed capital or depreciation allowances,<sup>3</sup> (2) domestic net savings, and (3) deficits of the nation or the net inflow of foreign capital. Domestic net

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<sup>3</sup>. Provision for the consumption of fixed capital is defined in United Nations, Yearbook of National Accounts as follows: "These provisions cover the current value of wear and tear and foreseen obsolescence of all fixed capital as well as accidental damage to it..... The provisions charged take into account the cost of replacing the assets in the year for which the provisions are being calculated. No attempt is made to allow for arrears of depreciation arising from the fact that earlier provisions have been made at a lower price level." The Japanese figures are based upon quarterly and annual publications of "Corporated Enterprises Statistics" by Ministry of Finance, "Report on the Surveys of Farm Households" by the Ministry of Agriculture and Forestry and also on the data collected independently by Economic Planning Agency. The figures for depreciation allowances appearing in "Corporated Enterprise





savings are further classified into; (1) public sector savings, (2) private business sector savings, and (3) household or personal sector savings. In this section, deficits of the nation will be excluded from the discussion, because these problems have already received some attention in the preceding section.

First of all, we shall re-classify the afore-stated gross domestic savings into two main categories; (1) household savings and (2) non-household savings.<sup>4</sup> Obviously in non-household sector savings are included depreciation allowances and public and private (business) sectors net savings. An international comparison of the distribution of gross domestic savings between household and non-household sectors is shown in the following table. These figures are all weighted percentage ratios of one sector's savings to the total gross domestic savings. Here, household income, which is the source of household savings, consists not only of wages and salaries of employees but also of personal receipts of income from property, income from entrepreneurship of unincorporated enterprises, current transfers from general government and of current transfers from the rest of the world. It is, therefore, somewhat misleading

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Statistics" are all estimated in terms of book value of fixed assets instead of capacity value. In the case of Japanese figures, therefore, no allowances are made for possible discrepancy between the actual current value of fixed assets and the reported current value of fixed assets.

4. This method of classification is suggested by Nicholas Kaldor, "Alternative Theories of Distribution", Review of Economic Studies, Vol. XXIII, No. 2, 1955 - 56, reprinted in his Essays on Value and Distribution, London: G. Duckworth, 1960. See especially pp.228 - 29 in the latter.



to interpret "household savings" appearing in the United Nations data as representing the savings by genuine households. In order to avoid this statistical pitfall, the savings of households are allotted proportionally to household and non-household sectors by using the percentage of compensation of employees to the sum of various components of household income as the weight.<sup>5</sup> Admittedly, this method is a little too coarse, because it presupposes that no part of the savings originating in household income other than compensation of employees is of a personal nature. However, it does not seem possible, not only technically but also conceptually, to determine which portions of the savings by unincorporated enterprises are personal and not for business.

Table 3 - 3

DISTRIBUTION OF GROSS DOMESTIC SAVINGS BETWEEN  
HOUSEHOLD AND NON-HOUSEHOLD SECTORS: AN INTER-  
NATIONAL COMPARISON

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
<u>CANADA</u>										
Household	20.2	18.3	13.0	13.0	13.5	10.3	14.9	12.0	12.9	12.7
Non-house.	81.0	75.1	77.6	79.4	73.5	73.8	69.6	73.9	73.5	78.4
Deficits	-3.1	7.2	7.9	10.4	16.6	16.1	13.5	16.6	13.4	11.7
Errors*	2.1	-0.6	1.4	-2.9	-3.6	-0.2	2.1	-2.5	0.2	-2.7
<u>GERMANY (W)</u>										
Household	--	15.0	18.2	18.3	18.0	22.6	24.1	22.1	20.7	19.0
Non-house.	--	99.4	99.4	92.9	98.4	88.8	86.9	85.3	84.7	83.8
Deficits	--	-17.9	-15.7	-9.5	-14.4	-11.4	-11.0	-7.3	-5.4	-2.8
Errors		3.4	-1.9	-1.7	-2.3	0.0	0.0	0.0	0.0	0.0

<sup>5</sup>. The percentage distribution of the components of household income in Japan in 1960 was; compensations of employees, 58, income from unincorporated enterprises, 31.7, rents, 2.5, interests, 4.7, dividends, 2.1 and transfer income, 5.6 per cent. (National Income White Paper, 1961.)





	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
<u>JAPAN</u>										
Household	22.2	14.9	17.0	22.0	21.8	17.8	25.8	21.7	21.5	19.6
Non-house.	85.4	79.4	78.0	83.8	76.1	75.4	95.0	81.0	85.0	77.2
Deficits	-8.4	-0.7	-4.0	-6.9	-0.7	6.6	-4.8	-3.1	-1.1	4.7
Errors	0.3	6.5	9.0	0.1	2.8	0.3	-16.0	0.4	-5.4	-1.6
<u>U. K.</u>										
Household	13.8	13.7	12.1	15.8	11.4	10.4	8.5	11.2	13.1	24.9
Non-house.	88.8	85.1	92.9	85.5	89.2	89.0	93.0	89.7	84.3	75.7
Deficits	-8.1	-4.9	-9.3	1.7	-5.8	-5.8	-9.3	-2.8	6.5	1.6
Errors	5.5	6.1	4.3	-3.0	6.0	6.3	7.8	1.9	-5.2	-2.2
<u>U. S. A.</u>										
Household	22.1	22.1	21.2	15.2	18.8	21.3	24.1	19.4	17.4	21.9
Non-house.	78.7	74.3	78.3	83.6	83.6	84.0	77.9	81.4	88.1	84.6
Deficits	-4.0	-0.4	-2.2	-1.7	-4.5	-4.5	0.1	2.6	-1.5	-2.9
Errors	3.3	4.0	2.8	2.9	2.1	-0.8	-2.1	-3.4	-3.9	-3.7

\*includes statistical discrepancy between savings and investments and also adjustment for stock valuation.

Source: United Nations, Yearbook of National Accounts Statistics 1959, 1961, and 1962. New York: United Nations, 1960, 1962, 1963.

For our immediate purpose, the non-household savings in the above table should preferably be net of depreciation allowances.

In some countries, the percentage figures for non-household savings appear relatively high simply because of larger shares of depreciation allowances in gross domestic savings. Quite naturally, percentage ratios of depreciation allowances to gross domestic savings are higher in the economies which are growing at lower rates.

Table 3 - 4

PERCENTAGES OF NON-HOUSEHOLD SECTOR SAVINGS NET OF  
DEPRECIATION ALLOWANCES

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Canada	41.6	36.0	29.1	35.1	35.5	28.5	21.1	26.5	23.2	22.9
Germany (W)	--	55.6	58.2	58.7	60.9	53.5	50.2	50.9	52.9	51.1
Japan	63.6	56.6	48.3	51.9	49.4	49.1	53.3	51.7	57.0	50.9
U. K.	26.4	28.5	37.0	36.0	39.6	40.2	40.9	40.1	41.5	30.8
U. S. A.	32.4	26.6	23.8	34.4	33.6	29.8	16.9	28.7	32.2	24.1



The ten-year average of Japan's percentages of non-household sector savings net of the percentages of depreciation allowances is estimated at 53.2 per cent and this ratio is the second highest , among the countries represented, exceeded only by Germany (W) where the same ratio during the nine-year period from 1953 to 1961 averaged 54.7 per cent.

### C. Income Distribution: Statistical Findings

The statistical evidence that the main savers in an economy were non-household sectors will lead us to the speculative argument that during the postwar period the distribution mechanism favored capital. It would be permissible to associate household sector income with labor share and non-household sector income with capital share. Two alternative sources of information to examine the labor share in an economy are available at hand; one is the national income account and the other is the industrial census. The former source may be conveniently exploited to compute the relative share of labor in an economy by obtaining the percentage ratio of compensation of employees to total national income at factor cost.<sup>6</sup> Industrial censuses of various countries supply valuable data concerning total value added and wages and salaries paid in

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<sup>6</sup>. In this section, "labor share", "the relative labor share", "labor income", and "relative share of compensations of employees" are all used synonymously. Some might object this usage by pointing out that the income from unincorporated enterprise is "labor share" in part, and therefore, the compensation of employees is not identical with the relative share of labor income in total national income. Conceptually, this contention is no doubt valid. However, how should one be able to distinguish between "returns to labor" and "returns to capital" in the income accruing to the entrepreneurship of an unincorporated enterprise? Incidentally, it should be noticed that in the I. L. O. statistics "compensation of employees" and "labor income" are synonymously used. Reference should be made to Yearbook of Labor Statistics.





mining and manufacturing industries.<sup>7</sup> The labor share may be computed, in these data, as the percentage ratio of wages and salaries to total value added. The weighted average of the percentages of wages and salaries paid to total value added in various industries should be equal, at least conceptually speaking, to the percentage of compensations of employees in national income at factor cost. In practice, however, such an identity may or may not occur, depending upon the statistical methods employed in national income accounts and industrial censuses and also upon the statistical errors and omissions which are almost inevitably involved in the process of computation.

What follows is an attempt to compare Japan's labor share with other representative industrial countries. We shall start, first of all, with an international comparison of the percentages of compensation of employees to national income at factor cost.

Table 3 - 5

PERCENTAGE SHARES OF COMPENSATION OF EMPLOYEES IN NATIONAL INCOME AT FACTOR COST : AN INTERNATIONAL COMPARISON

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Canada	61.2	64.4	67.4	65.8	66.2	69.2	68.7	67.3	66.6	67.3
Germany (W)	--	--	--	56.6	56.4	56.0	56.1	56.0	56.7	58.1
Japan	45.7	47.7	50.0	48.3	49.1	50.4	53.0	51.0	50.3	50.7
U. K.	71.8	70.9	70.6	73.0	73.7	73.5	73.9	73.4	73.0	73.2
U. S. A.	67.2	68.9	69.4	68.4	69.8	70.5	70.9	70.3	71.5	71.5

Source: United Nations, Yearbook of National Accounts Statistics, 1959, 1960, and 1962. New York: United Nations, 1960, 1961, 1963.

<sup>7</sup>. For a definition of "value added", see p. 79 of this chapter.





The results in Table 3 - 5 might be interpreted as implying that Japan's labor share was low relative to other countries. However, the link between the relative labor share in an economy and the percentage ratio of compensations of employees to national income can only be established where the percentages of employed workers in total working population are all equal in the countries compared. For those countries considered in Table 3 - 5, this is certainly not the case.

Table 3 - 6

PERCENTAGES OF EMPLOYED WORKERS IN  
TOTAL WORKING POPULATION: AN INTERNATIONAL  
COMPARISON

Countries	Years	Percentages
Canada .....	1959	82
Germany (W) .....	1957	74
Japan .....	1955	43
U. K. ....	1951	88
U. S. A. ....	1950	82

Source: International Labour Office, Year Book of  
Labour Statistics 1956 - 1962. Geneva: I.L.O.

The findings in Table 3 - 6 would probably discourage analysts to ascribe the relatively low share of compensation of employees in national income in the postwar Japanese economy to the phenomenon that Japanese workers received a smaller share of the nation's total output.

The time series data regarding the percentages of employed workers in the total working population in the Japanese



economy are supplied below to supplement the results in Table 3 - 5. Unfortunately, similar data are not available at hand with respect to the rest of the countries.

Table 3 - 7

PERCENTAGES OF EMPLOYED WORKERS IN THE TOTAL  
WORKING POPULATION IN JAPAN: 1953 - 1961

	1953	1954	1955	1956	1957	1958	1959	1960	1961
Percentages	48.2	38.5	40.0	41.7	43.8	45.8	47.2	49.0	51.5
Index number	100.0	100.8	104.7	109.2	114.7	119.9	123.6	128.3	134.8

Source: Economic Planning Agency, Economic White Paper 1959, 1960, 1961, and 1962, Tokyo: Economic Planning Agency.

The figures in Table 3 - 7 may be considered as relevant to the inference that the relative number of employees in the total working population increased during the postwar period. One may then examine how this trend in the employment structure was reflected in the pattern of national income distribution by factors. For this purpose one can construct index numbers for the percentage share of compensation of employees illustrated in Table 3 - 5; and these indices are compared with the index numbers for the percentages of employed workers presented in Table 3 - 7.

Table 3 - 8

THE TREND IN EMPLOYMENT STRUCTURE AND DISTRIBUTION  
PATTERN OF NATIONAL INCOME BY FACTORS

	1953	1954	1955	1956	1957	1958	1959	1960	1961
Employment	100	101	105	109	115	120	124	128	135
Distribut.	100	105	101	103	106	111	107	106	106

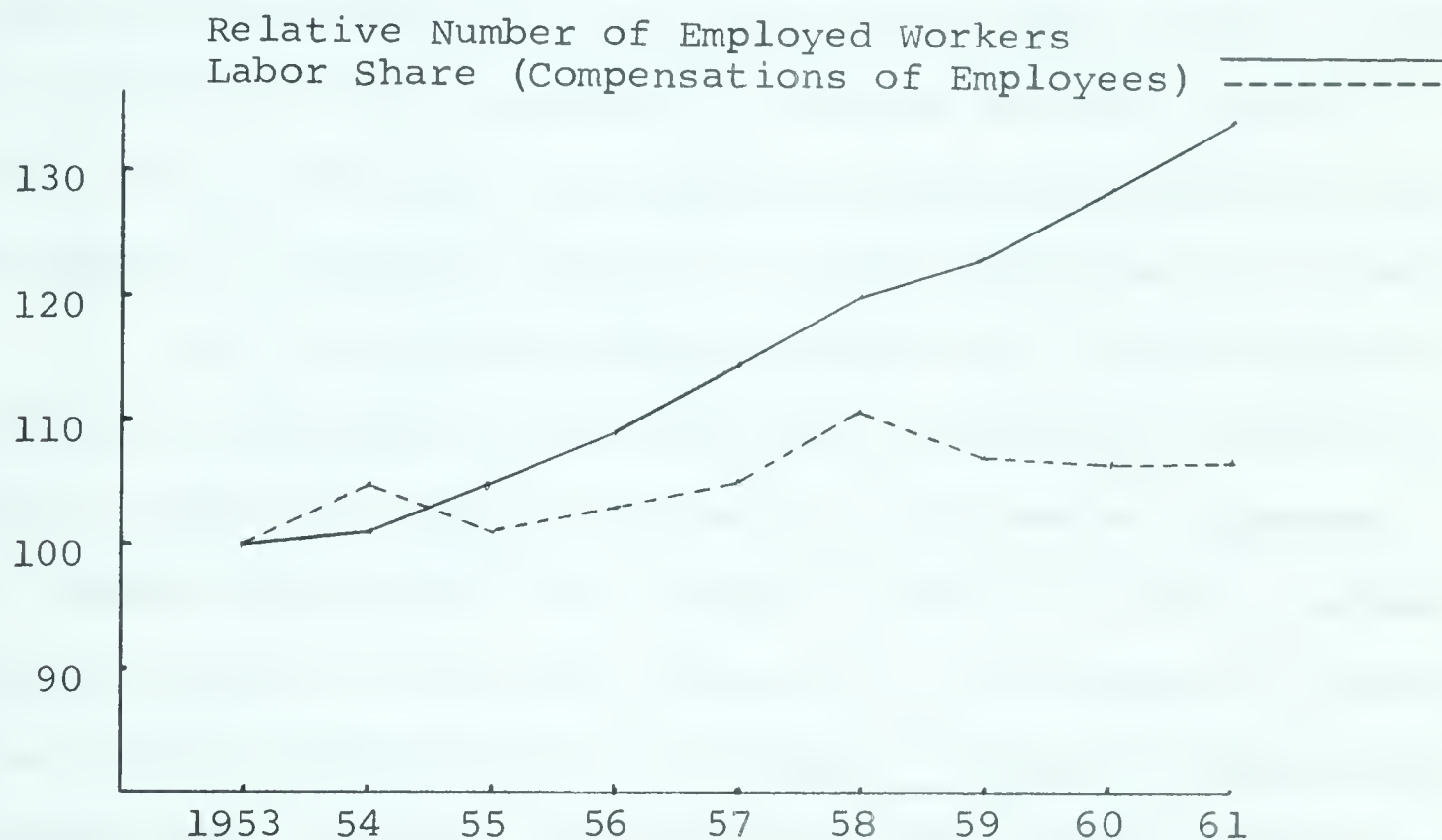




The above results appear to confirm the statement that the relative shares of wages and salaries in national income showed a declining tendency during the postwar period.

Figure 3 - 1

AN ILLUSTRATION OF THE SCISSORS EFFECT BETWEEN THE RELATIVE NUMBER OF EMPLOYED WORKERS AND THE RELATIVE SHARE OF COMPENSATION OF EMPLOYEES  
: 1953 - 1961



The present analysis has started with an inquiry whether the relative share of labor in national income remained at a low level during the postwar period. The preceding analysis, however, does not seem to have succeeded in answering this inquiry directly. Since we have no adequate theoretical criteria with which to determine what is the "proper" or "fair" share of wages and salaries the feasible technique open to us is just an international comparison of the relative income of employees. Even this empirical approach cannot be exploited to a satisfactory extent because of



inevitable incomparabilities in the employment structures in the countries compared. The difference in the relative numbers of employed workers in these countries is too significant to be ignored. Take, for example, the case of Canada in 1959; the employed workers who occupied 82 per cent of the total working population received 67.3 per cent of the total national income. In the same year the Japanese employed workers who made up only 47 per cent of the total labor force were entitled to 51 per cent of national income. Adjusting the difference in the employment structure between the two countries, one may even say that Japanese employed workers enjoyed a larger share of national income than their counterpart in Canada.

An alternative method adopted was a trend analysis of the share of compensations of employees in national income and the relative number of employed workers in the postwar Japanese economy. Quite expectedly, this analysis cannot be used to answer our original inquiry. The trend analysis is not capable of furnishing any solution to the question of whether a country's labor share is relatively low. However, this does not imply that a trend analysis is meaningless. The revealed trends in employment structure and distribution pattern of national income by factors may indicate definitely that the relative share of labor income declined steadily during the postwar period, no matter what its initial level might have been. One may now proceed to an international comparison of the share of labor income in terms of industrial censuses.

The following analysis will be confined to manufacturing industries of seven countries in which some usable data are available. The relative share of labor income in industrial censuses





will be defined as, the percentage ratio of wages and salaries paid to the total value added in these industries in a specified period of time.

Table 3 - 9

THE RELATIVE SHARES OF LABOR INCOME IN MANUFACTURING INDUSTRIES:  
AN INTERNATIONAL COMPARISON

Countries	Years	Total Value Added (A)	Wages & Salaries Paid (B)	B/A%
Australia	1954	1,178 million A.pounds	685 million A.pounds	58.1
Sweden	1953	11,345 million Kroner	6,583 million Kroner	58.0
France	1953	3,192 billion Franc	1,806 billion Franc	56.6
Denmark	1953	5,028 million Kroner	2,829 million Kroner	56.3
U. K.	1954	6,121 million pounds	3,414 million pounds	55.8
U.S.A.	1954	117 billion dollars	63 billion dollars	53.9
Canada	1953	2,023 million C.dollars	1,002 million C.dollars	49.5
Japan	1953	1,692 billion yen	666 billion yen	39.4

Source: United Nations, Patterns of Industrial Growth 1938 - 1958, New York; United Nations, 1960.

The considerable discrepancy between the results in Table 3 - 5 and those obtained from industrial censuses obviously stems from the exclusion or inclusion of depreciation allowances in the numerator used; national income at factor cost, which is used as the numerator in Table 3 - 5, excludes depreciation allowances while value added in industrial censuses in general includes them. Some comments are now required on the definition of value added in industrial censuses. The United Nations' definition of the concept of value added reads as follows:





"The gross value of production during a year or some other period is the sum, for the period, of the value of shipments of commodities, including goods sold in the same condition as purchased, adjusted by the changes in the value, between the beginning and end of the period, of work in process and stocks of finished goods, the value of fixed assets made for own use and the value of receipt for other work done or services rendered. These items may be valued, ex-statistical unit, at market prices or factor cost--i.e., including excise, sales and other indirect taxes or excluding indirect taxes but including subsidies, respectively. Value added is derived by subtracting from the gross value of production of the statistical unit during a period, the sum, for the period, of the value of all commodities (e.g., materials, components, supplies, fuels, goods ordinarily sold in the same condition as purchased) delivered, adjusted for changes in the value, between the beginning and end of the period, of stocks in these commodities--i.e., the value of commodities consumed, the value of electricity purchased from others, and the value of services of an industrial nature provided by other statistical units. The commodities are valued at laid down value at the statistical unit. If, in addition, the value of business services (e.g., advertising, insurance, accounting or legal consultation) received from others is subtracted from gross value of production, the result is the contribution to the gross domestic product. This like value added, may be valued at market price or factor cost, depending on how gross value of production has been valued. The subtraction of depreciation from contribution to the gross domestic product at factor cost gives the contribution to the net domestic product."<sup>8</sup>

Presumably, the value added appearing in Table 3 - 9 is identical with the manufacturing industries' contribution to the gross domestic product. In actuality, however, it is highly questionable whether the statistical methods of these countries represented in Table 3 - 9 are strictly in conformity with the concepts defined by United Nations. Take, for example, the case of Australia.

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8.

United Nations, Patterns of Industrial Growth 1938 - 1958, New York: United Nations, 1960. p.434.



"The value of production (value added) is obtained by deducting 'value of materials used' and 'value of fuel' from the 'value of output'. The figure thus calculated is, however, not the net value of production. The deduction for depreciation is included in the value of production. Many miscellaneous expenses such as taxation, insurance, advertising and other sundry charges, have not been taken into account. Therefore, it must not be inferred that when salaries and wages are deducted from the value of production the whole of the surplus is available for interest and profit."9

Similarly, the Japanese industrial censuses compiled by the Ministry of International Trade and Industries do not take into consideration such items as insurance, inter-factory transportation cost, warehousing charges, advertisements and other expenses of sales promotion. While on the other hand, in the French industrial censuses, value added is net of depreciation allowances. In the cases of Canada, U. K., Denmark and U.S.A., value added is defined as the difference between the sales value, ex-factory and net of excise taxes, of production during the year and the cost at the factory of the commodities, energy and sub-contract work consumed in this production. However, no details of such cost items as advertisements are known relative to the data of these countries. Furthermore, some scrutiny is required in regard to the concept of wages and salaries paid. In most cases, the wages and salaries paid are estimated from the figures of the total wage bills in manufacturing industries. In this computation non-wage payments are very likely to be omitted. It is obvious that in the Japanese industrial censuses wages and salaries paid are not adjusted for various forms of welfare costs of







employees on company accounts. Conceptually speaking, such items as a company's expenses on free housing for employees should be included in wages and salaries paid.<sup>10</sup>

In view of these incomparabilities involved in the statistical practices, one should interpret the results in Table 3 - 9 with some strong reservations. As a matter of fact, there is no way to assess to what extent these incomparabilities affect the meaningfulness of the international comparison of the relative share of employees in the total income of manufacturing industries. Professor Ryutaro Komiya points out in this connection, referring to the Japanese data, that "industrial censuses compiled by the Ministry of International Trade and Industries should not be used for the analysis of distribution problems."<sup>11</sup> The conceptual basis

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10.

"The factor which must be taken into consideration (comparing Japanese wage levels with those of other countries) is the high development in Japan of what is called 'fringe benefits' or 'company extras'. It is a traditionally established practice for Japanese employers to pay their workers, in addition to the regular monthly wages, summer and year-end bonuses which in total roughly amount to an equivalent to 3 months' wages. Aside from these cash 'extras', it is the usual practice for employers to provide such non-cash benefits as meals, commutation tickets, and the like; workers' dormitories, company-built houses for private use, hospitals, and welfare and recreational facilities are provided as well. Moreover, employees are expected to be paid generous sums on retirement. According to a survey conducted by the Ministry of Labor in 1957, 80 per cent of all business enterprises owned employee welfare facilities in some form, and the amount of non-statutory welfare expenditures privately borne by employers amounted to as much as 6 per cent of the total cash wage payments of regular wages and bonuses, in addition to retirement allowances." (Wage Problems in Japan, Tokyo: Ministry of Labor, 1961. p.9.)

11.

Ryutaro Komiya, et., al., Economic Growth in Postwar Japan, Tokyo: Iwanami Shoten, 1963. p.135.



of Professor Komiya's contention is that the numerator to be used for the estimation of the relative share of employee's income should be net of all kinds of direct costs which may contribute to the income of other industries, especially of those service industries. As far as the availability of data is concerned, it is possible to present time series figures concerning the relative share of the employee's income in the postwar Japanese manufacturing industries. However, the analyst should be warned concerning the Japanese industrial censuses, some inadequacy of which has been already discussed. No matter how inadequate these censuses may be, some value as a reference might be attached to it.

Table 3 - 10

THE RELATIVE SHARE OF LABOR IN MAJOR MANUFACTURING INDUSTRIES IN JAPAN : 1952 - 1960

Year	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
1952	40.9	34.1	34.7	37.2	20.5	36.0	60.3	43.9	51.0	40.9	57.0
1953	35.9	31.6	36.5	28.7	18.2	37.9	45.3	44.3	52.3	38.0	51.3
1954	37.4	36.2	33.6	29.3	24.2	28.3	51.1	42.5	48.8	37.4	55.1
1955	34.5	34.6	33.3	27.8	19.9	29.4	42.4	41.1	48.1	37.9	61.1
1956	34.8	32.4	34.6	27.8	23.5	31.1	34.1	42.8	47.0	39.1	53.7
1957	38.5	33.2	35.8	31.2	19.9	29.8	35.6	37.4	44.1	36.8	50.8
1958	39.2	34.3	30.3	29.0	21.6	32.0	46.5	40.2	40.2	27.5	35.0
1959	35.2	30.2	39.1	24.5	14.5	34.8	37.7	41.7	41.4	30.0	38.2
1960	35.6	30.2	39.0	22.6	15.6	31.9	35.4	38.2	39.1	30.5	33.0

Note: (A) = Textile, (B) = Paper and pulp, (C) = Printing and publishing  
 (D) = Chemicals, (E) = Coal and petroleum products,  
 (F) = Rubber, (G) = Steel, (H) = Metal products, (I) = Machinery,  
 (J) = Electric equipment, and (K) = Transportation machinery.  
 The value added figures used in the above computation are not net of depreciation.

Source: Masao Baba, "Economic Growth, Unionism, and Income Distribution", in Ryutaro Komiya, et. al., Economic Growth in Postwar Japan, Tokyo: Iwanami Shoten, 1963. p.138.





We shall hereafter examine the phenomena which have been analysed in the preceding pages from a somewhat different angle. Putting aside national income accounts and industrial censuses for a moment, we shall concentrate our attention upon the trends in labor productivity and real wage rates during the postwar period. It may be intuitively expected that there was a considerable scissors effect between the trend in labor productivity and that of real wage rates. If the rise in labor productivity is accompanied commensurately by the rise in real wage rates while the average propensity to save of wage earners remains constant over a period of time, it would be impossible for an economy to create additional net domestic savings at an increasing rate unless the economy invites foreign capital to meet the domestic investment need.<sup>12</sup> As it has been observed already in this thesis, the average propensity to save of the Japanese household did not appreciably change during the postwar period.<sup>13</sup> The labor productivity gain will result either in the reduction of prices or

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12.

Following Harrod, let us put  $G = s/a$ , where  $a$  and  $s$  are capital/output ratio and saving ratio, respectively and  $G$  is the growth rate. Assume that  $a$  remains constant over time. The total savings are the sum of household and non-household sectors savings. The productivity gains,  $\Delta Y$ , are distributed between household  $\Delta Y_1$  and non-household,  $\Delta Y_2$  sectors income. Therefore,  $\Delta Y = \Delta Y_1 + \Delta Y_2$ . The total savings are:  $S = s_1 \Delta Y_1 + s_2 \Delta Y_2$ , where  $s_1$  and  $s_2$  are the saving ratios of household and non-household sectors, respectively. Assume, then,  $s_2 > s_1$  holds over time. Under these circumstances, the saving ratios of an economy as a whole,  $s = Y/S$  will increase with constant  $s_1$  and  $s_2$ , if the productivity gains,  $\Delta Y$ , are distributed in favor of non-household sectors. If  $s$  increases, then an economy will grow at an increasing rate. The growth rate in the postwar Japanese economy has been exponential.

13.

See p. 55 of this thesis.





in the increase of income or in both. Either case will witness the rise in real income. If an increased real income is distributed between labor and capital under the constant distribution coefficient, no scissors effect will appear between the trend in labor productivity and that of real wage rates.

Some technical difficulties are involved in defining labor productivity. Theoretically, labor productivity is synonymous with total output per unit of labor input. In practice, however, it is a highly elusive task to determine labor input quantitatively while the measurement of total output is relatively easy. Preferably, labor input should be computed as the total man-hours of the average quality worker utilized in production in a specified period of time. Regrettably, however, these data are not available. As second best, one may use the employment index as an indicator of labor input. The shortcomings of this method are readily apparent. It is frequently observed in a modern economy that employment figures are not appreciably responsive to the general trend in productive activities. Modern manufacturing enterprises would not employ or discharge workers smoothly according to their short term production plans. This practice is especially true of the permanent employees in contradistinction to temporary employees.<sup>14</sup> Entrepreneurs would rather attempt to adjust the relationships between labor input and production by altering the intensity of labor utilization; and such an intensity is totally undetectable from the employment index. Furthermore, the employment index published by the

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14.

In the Japanese economy, there is a significant difference between employees on a permanent basis and those on temporary basis. In most cases, the former are recruited through "normal channels", mostly from schools and training institutions and the latter are usually employed through the Public Employment Security Office.



Ministry of Labor of the Japanese Government is concerned only with permanent employees. These technical limitations, therefore, should be kept in mind while evaluating the findings which follow.

Table 3 - 11

THE TREND IN LABOR PRODUCTIVITY IN MINING  
AND MANUFACTURING INDUSTRIES IN JAPAN:  
1953 - 1961

1955 = 100

Year	Employment (A)	Production (B)	B/A %
1953.....	94.2	85.8	91.1
1954.....	97.8	93.0	95.1
1955.....	100.0	100.0	100.0
1956.....	106.9	123.3	115.3
1957.....	117.7	143.3	121.8
1958.....	125.1	144.2	115.3
1959.....	138.3	172.8	124.9
1960.....	156.7	215.2	137.3
1961.....	171.8	256.8	149.5

Source: Economic Planning Agency, Handbook of Economic Statistics, 1963, Tokyo: Economic Planning Agency, 1963.

In Table 3 - 11 a sharp decline in labor productivity is noticed over the period from 1957 to 1958. This decline should not be interpreted as suggesting the actual decline in labor productivity. There was a considerable setback in productive activities in 1958 because of the inventory recession which followed the close of the so-called Suez Canal crisis boom. The real GNP in that year was slightly lower than that of 1957. The recession in 1958, however, was regarded by the majority of entrepreneurs as not so serious that they did not have their employment policy influenced.

It may be deduced from Table 3-11 that a





higher level of production was achieved without inducing a commensurate increase in employed workers; and this phenomenon is attributable to the rising labor productivity. We shall then compare the results in Table 3 - 11 with the observed trend in real wage rates during the same period.

Table 3 - 12

INDEX OF REAL WAGE RATES IN MINING AND  
MANUFACTURING INDUSTRIES: 1953 - 1961  
1955 = 100

	1953	1954	1955	1956	1957	1958	1959	1960	1961
Wage Rates	92.9	94.0	100.0	107.1	108.7	112.5	118.1	121.8	129.0

Note: Wages of temporary employees are disregarded in the above computation.

Source: Economic Planning Agency, Handbook of Economic Statistics 1963. Tokyo: Economic Planning Agency, 1963.

A graphic illustration of the findings in Tables 3 - 11 and 3 - 12 will more vividly depict the relationships between the trends in labor productivity and in real wage rates.

At this stage, one should digress for a while from the main line of this section and compare some of the findings in the preceding chapter with what are exhibited in Figures 3 - 1 and 3 - 2.<sup>15</sup> Through this comparison, it is evident that the postwar Japanese economic expansion can be divided into two stages; the

15.

Specifically, Tables 2 - 1 and 2 - 2 in Chapter II.



period from 1955 to 1957 and the one from 1958 to 1961. In 1956 the index of private sector gross domestic fixed capital formation rose to 146 then to 193 in 1957, both as against 100 in 1955, while the index of labor productivity gained substantially from 100 in 1955 to 115.3 in 1956, then to 121.8 in 1957. These changes are also reflected in the percentage ratios of gross domestic fixed capital formation to GNP. In 1955, for example, 18.6 per cent of GNP was reflected in gross domestic fixed capital formation while in 1956 the same percentage ratio suddenly rose to a high 24 per cent.

Japanese economic historians seem to prefer to call this first stage of economic expansion in the postwar period "Suez Boom", because the buoyancy of that period was no doubt initiated, to a considerable extent, by the international crisis which followed the Egyptian Government's announcement of the nationalization of the canal in July, 1956. The eventual bombardment of the canal by the British and French air forces, and the close-down of the canal, caused wide-spread anxiety among world shipping industries, especially among tanker operators, that the canal would not be operated for a considerable length of time. As a result of this, there occurred rush orders for large-sized tankers which could be economically operated to ship Middle East crude oil to the world industrial centers around the Cape of Good Hope. Japanese shipbuilders were among those who benefited from this windfall. Japanese exports of ships increased from 78 million U. S. dollars in 1955 to 257 million in 1956, and then to 349 million U. S. dollars in 1957. This initial impact which took place in the ship-building industry played a significant role as a pace-setter of investments in other





sectors of the Japanese industries. The "Suez Boom" lasted for a period of two years until such time as serious bottlenecks became apparent within the structure of industries. One of the major bottlenecks was Japan's steel industry which was not capable of meeting the ever-increasing demand for steel from ship-builders. Japan's imports of steel skyrocketed from 10 million U. S. dollars in 1955 to 61 million in 1956, then to 305 million U. S. dollars in 1957. In 1957, together with finished steel products, there was a considerable increase in the imports of iron ore, iron scraps, coal, crude oil, non-ferrous metal ore, machine tools and so forth. The over-all balance of trade in 1957 showed a deficit of 109 million U. S. dollars and Japan's foreign exchange reserves declined from 839 million U. S. dollars in 1955 to 629 million U. S. dollars in 1957. A warning signal was burned to direct the nation's attention to a balance of payment crisis.

The two-year-period of bullish expansion, the initial impact of which might be traced as far back as the mind of President Nasser, eventually gave way to the inventory recession of 1958. "Roughly speaking, the growth rate of the Japanese economy eventually depends on that of exports. It may be necessary to reduce the rate of growth in order to bring about equilibrium in the balance of payments."<sup>16</sup> One of the main techniques employed by the Government to slow down the pace of economic activities was a tight money policy. The discount rate was raised from 7.3 per cent per annum in 1956 to

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16. Hiroya Ueno, "A long-term Model of the Japanese Economy, 1920 - 1958", International Economic Review, May 1963, p.172.





8.4 per cent per annum in 1957; credit from the Bank of Japan extended to commercial banks was sharply reduced from 579 billion yen in 1957 to 383 billion yen in 1958. These monetary squeezes, among other things, made it necessary for industries to adjust their inventories. Inventories which were increased by 687 billion yen in 1957 declined in 1958 by 191 billion yen.

During the inventory recession in 1958, there were two major economic indices which did not show any declining tendency; one was the labor income and the other was the level of employment. In Figure 3 - 1, these circumstances are reflected in the movements of the two trend lines. The peak of the labor share index which appears in 1958 will explain the relative set-back of non-household income, especially of profits and income from properties in that year; and this peak corresponds to the dip which appears in the labor productivity curve in 1958. As has been noticed earlier, the labor productivity curve in Figure 3 - 2 does not depict the real trend of labor productivity itself. The curve rather illustrates the relationships between the trends in employment level and level of production. In 1958 production contracted while employment increased at the same rate as in preceding years. The reduction in total output, however, did not affect the absolute level of real wages while curtailing the non-household income to a considerable extent. These findings would have some analytical value. One may now establish the proposition that the Japanese wage structure is highly inelastic to business fluctuations. Furthermore, one may develop this proposition in more general terms and state that there exists some sort of time lag between the trend in real wage rates



and that of the general level of total output, though this kind of theorizing is of a somewhat speculative nature.

The relative unresponsiveness of real wages to business fluctuations during a boom period, would probably affect the distribution pattern in the manner which is opposite to the case experienced in 1958; the rise in real wage rates lags behind the rising trend in total output and consequently the relative share of labor declines during a boom period. This phenomenon is clearly depicted in Figures 3 - 1 and 3 - 2. After the recession in 1958, the Japanese economy enjoyed an unprecedented kind of prosperity over four consecutive years until 1962 when the pace of economic expansion faltered to a minor extent due to an unfavorable balance of payments. A number of reasons may be cited as the main causes of this lasting boom and some of them have been discussed in the previous chapter. The boom which started in 1959 seems to differ from the preceding one in that external circumstances, such as the Suez Canal crisis, could not be considered as a major impact.

The rise in labor productivity since 1958 was remarkable while the real wage rates increased at nearly the same rate as in the previous years; consequently, a scissors effect was created between them. Apparently, this is related to the phenomenal expansion of gross domestic capital formation in these years; the index of private sector gross domestic capital formation advanced rapidly from 205 in 1958 to 244 in 1959, 345 in 1960, then to 452 in 1961, as against 100 in 1953.

The relationships between the trends in labor productivity and those in real wage rates as have been revealed in the





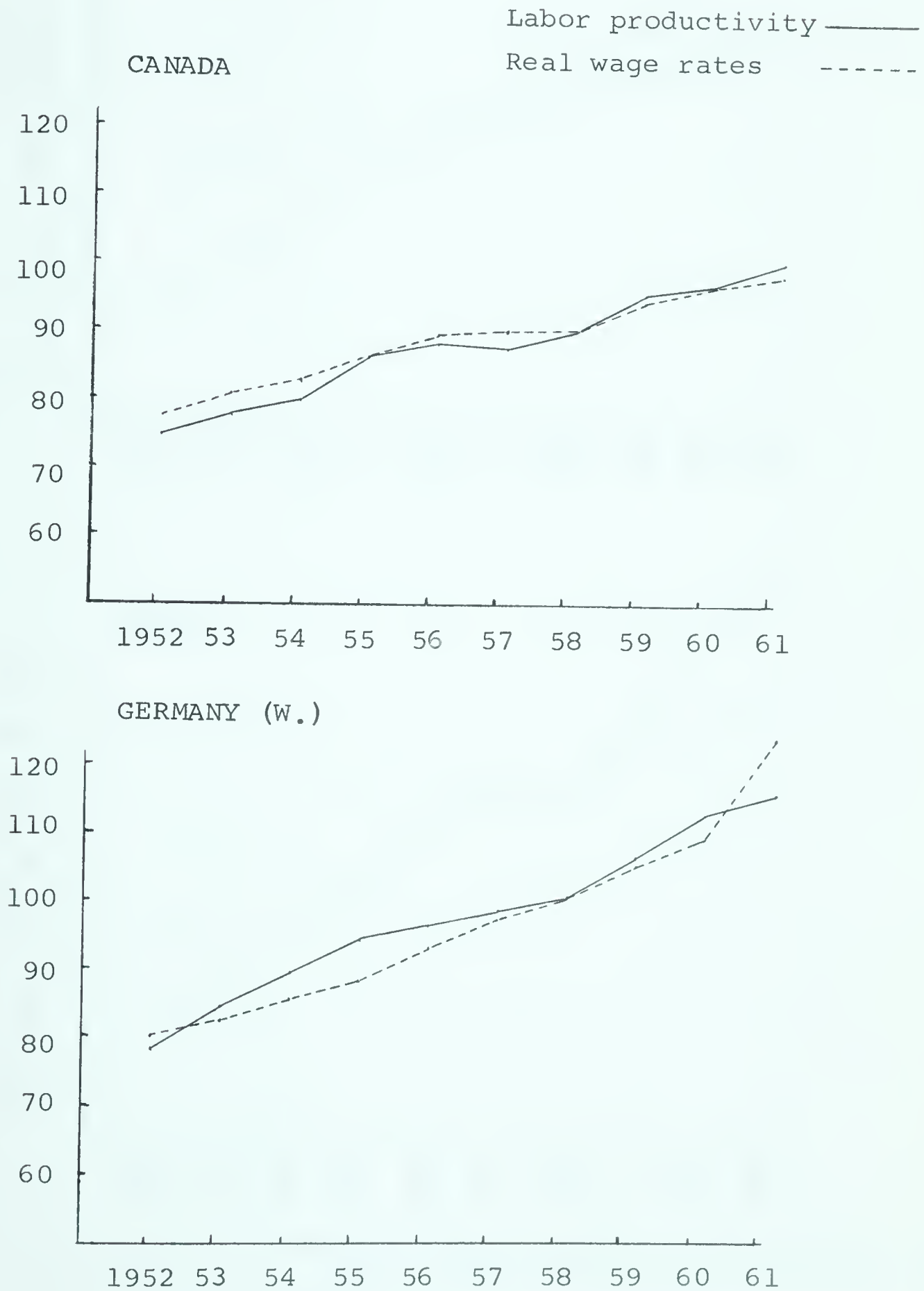
above analysis, may or may not be general phenomena observable in any industrial country. In order to see the Japanese case in a comparative perspective, one may examine those trends with respect to other representative industrial countries. Convenient data for that purpose are provided by the United Nations Statistical Office and International Labor Office. The following graphic illustrations of the trends in labor productivity and real wage rates in manufacturing industries in Canada, Germany(W), Italy, Japan, U. K. and U.S.A., are consistent in methods with the exercises demonstrated in Figure 3 - 2: labor productivity index is computed as the ratio of production index to employment level index. In the following comparison, manufacturing industries alone are considered for reason that only in these industries internationally comparable data are available in the accessible sources of information. The choice of 1958 as the base year instead of 1955 is simply arbitrary and primarily for the convenience of graphic illustrations.

The results of these exercises are hardly unexpected. In the countries considered, no significant scissors effect is observable except for the cases of Germany(W), Italy and Japan. In Canada, U. K. and U.S.A., both labor productivity and real wage rates have been rising nearly at the same rate over the entire period. In Germany two inflexion points are discernible in the trends of two indices; i.e., in 1955 and 1958. Over the periods from 1952 to 1955 and from 1958 to 1960 the German labor productivity rose at a rate higher than that of real wage rates, while during the periods from 1955 to 1958 and from 1960 to 1961 the reverse was the case. In the cases of Italy and Japan, there exists obvious scissors effect between the two trends over the entire period.



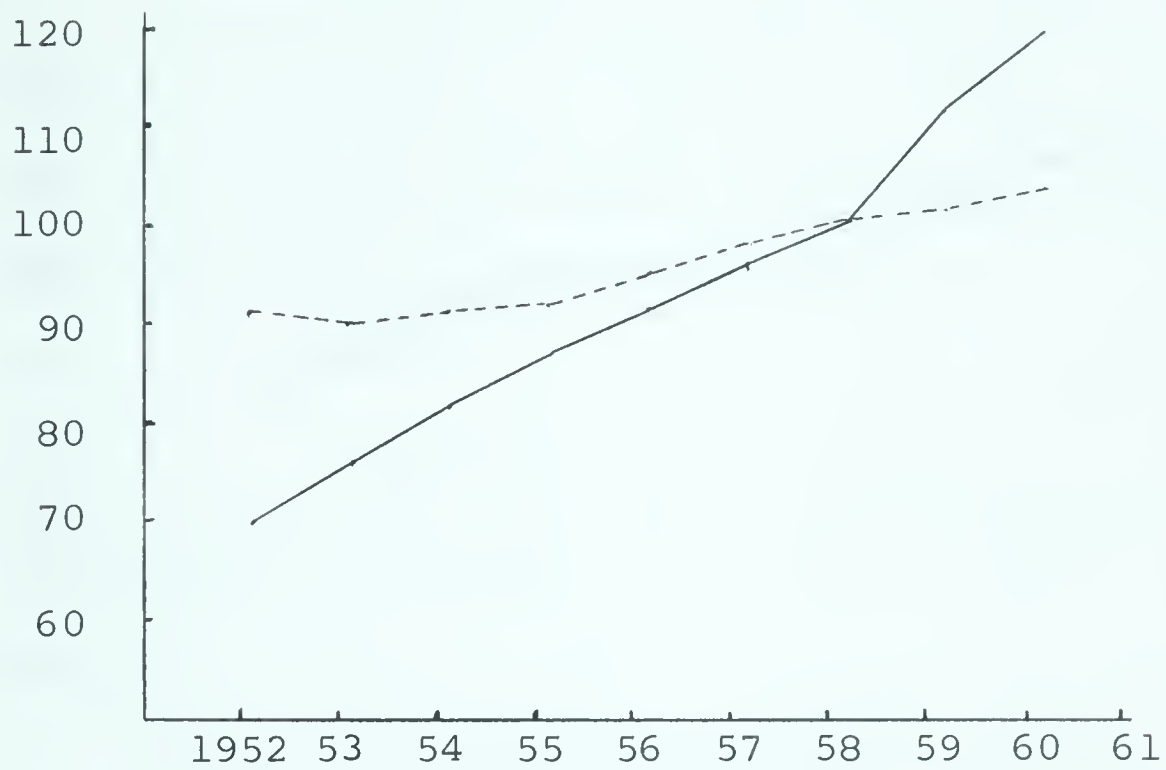
Figure 3 - 3

AN INTERNATIONAL COMPARISON OF THE TRENDS IN  
LABOR PRODUCTIVITY AND REAL WAGE RATES:  
1952 - 1961

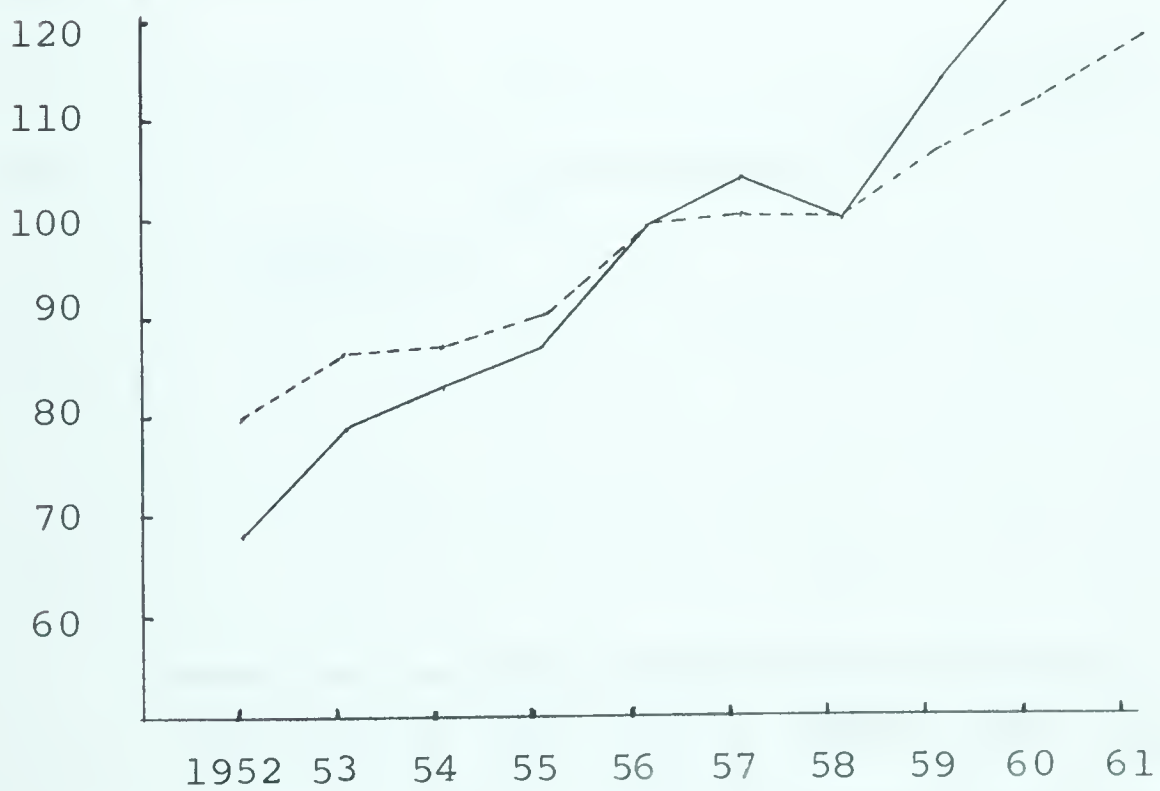




ITALY



JAPAN



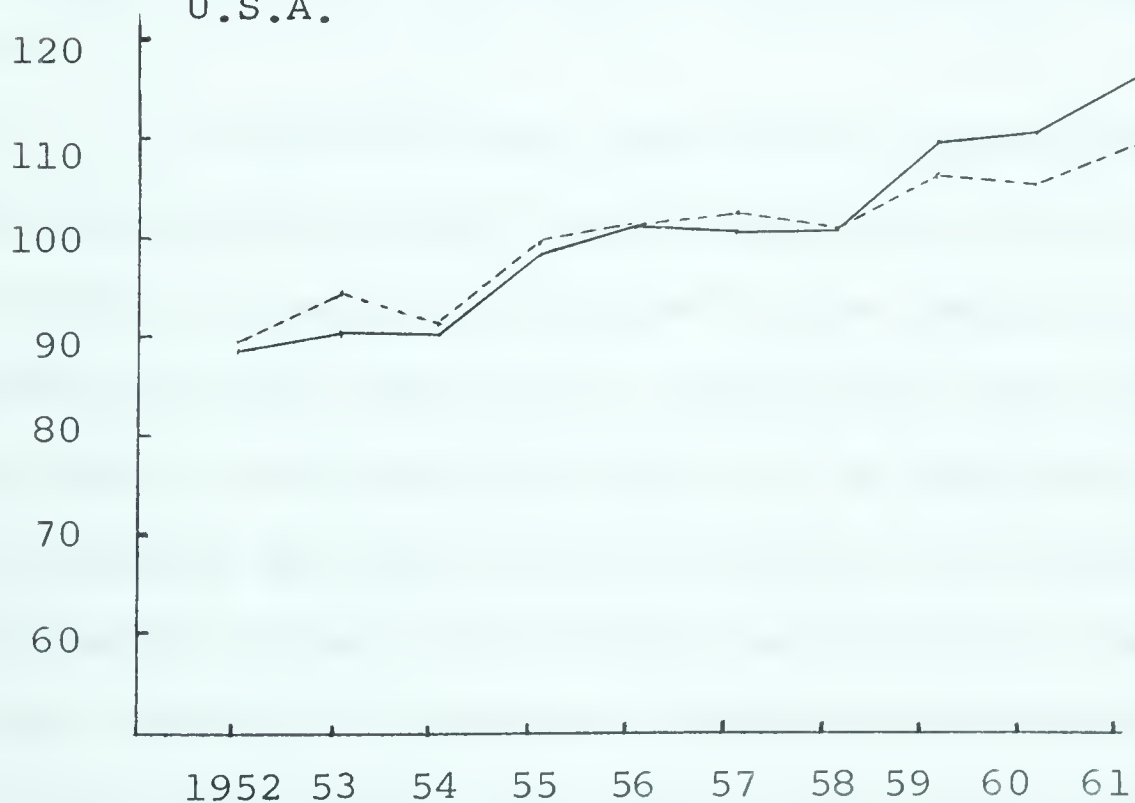




U. K.



U.S.A.



Sources: United Nations, The Growth of World Industry 1938 - 1961  
(United Nations, 1963), International Labor Office, Year  
Book of Labor Statistics 1958 - 1962, (I.L.O., 1959, 1963)



It may be justifiable, with some reservations, to associate the degree of scissors effect between the trends in labor productivity and real wage rates with annual rate of GNP growth. As supplementary information to the findings exhibited in Figure 3 - 3, the annual rates of real GNP growth of these six countries are computed in the following table.

Table 3 - 13

ANNUAL RATES OF REAL GNP GROWTH OF THE COUNTRIES  
REPRESENTED IN FIGURE 3 - 3 : 1953 - 1961

Japan	Italy	Germany (W)	Canada	U. K.	U.S.A.
9.4%	6.4%	7.1%	3.0%	2.7%	2.7%

Source: United Nations, Yearbook of National Accounts Statistics 1960 and 1962. New York: United Nations, 1961, 1963.

A chain of logic may now be established that one of the main determinants of GNP growth rates is the net saving ratio, which, in turn, is partly determined by the general trends in labor productivity and real wage rates. Additional real income resulting from the rise in labor productivity will be eventually distributed between household and non-household sectors of an economy through the mechanism of income distribution pertaining to that economy; and if this distribution mechanism works in favor of the high savers instead of the low savers, the marginal savings of the economy, or the total of savings out of the additional real income which has been generated as a result of the rise in labor productivity, would be higher than otherwise. The illustration in Figure 3 - 3 may serve





as an indicator of how this distribution mechanism has been working in various countries. No doubt from the figure that in the countries like Italy, Japan, and also Germany, to a lesser extent, the additional real income resulting from a higher productivity has been distributed in favor of non-household sectors of the economies; and non-household sectors in general are the high savers relative to the household sector.

This section has started with the proposition that the relatively high saving ratio of the non-household sectors of the postwar Japanese economy was facilitated by the income distribution mechanism which maintained wages and salaries paid to employees at a relatively low level. In summary, the statistical findings in this section point out that Japanese employees received a relatively small proportion of national income during the postwar period. This has been supported, to a certain extent, by international comparisons of the relative share of wages and salaries in terms of national income account data as well as of industrial censuses and also by a trend analysis of the relationships between the relative number of employees and the relative share of compensations of employees in the postwar Japanese economy. Furthermore, some relationships between the labor productivity gains and the rise in real wage rates have been investigated within the context of an international comparison. In view of the results obtained from these statistical findings, one may now conclude that the relative share of wages and salaries in the postwar Japanese economy either remained at a low level from the beginning or declined throughout the period or both.

There are various forces working behind the determina-



tion of patterns of income distribution and wage structures. Some of these conditions may be summarized as follows; (1) the state of technology, (2) impact of labor union, (3) conditions of labor market, (4) distribution of age groups, and (5) inflation. Some of these aspects will be exploited for the explanation of the Japanese case in the following section. One should now pause for a moment, retreating from the world of statistical figures and a calculator, and attempt to explain why, in the postwar Japanese economy, the share of compensation of employees was relatively low.

D. Income Distribution: An Analysis

One possible approach to the problems of income distribution is the marginal productivity theory. Defining the total output as the function of two independent variables, i.e., labor input and capital in use, one may discuss the income distribution problems in terms of returns to labor and returns to capital, both of which will be determined by the production function assumed. If the production function is homogeneous of degree one, the total output will be just exhausted after being distributed between two factors of production on condition that both factors are paid their marginal value products. If the degree of homogeneity of the production function is larger than one, there exists increasing returns to scale and the sum of the marginal value products of factors will be larger than output. In this case the total value of products cannot cover the sum of marginal value products of labor and capital. Under the decreasing returns to scale, the degree of homogeneity of the production function is less than one, and the total value output





will exceed the sum of marginal value products of the factors. If perfectly competitive product and factor markets are assumed, however, these two cases, i.e., increasing and decreasing returns to scale, may be conceptually excluded. The justification for this exclusion is as follows: if a firm operates under the increasing returns to scale, the firm will profit from expanding its scale of production until it reaches the point where the returns to scale become constant; while on the other hand, if a firm operates with decreasing returns to scale, this indicates the possibility of the entrance of other competitive firms into the industry concerned. In a perfectly competitive market, no firm can continue to operate with decreasing returns to scale. Therefore, the constancy of returns to scale is one of the characteristics pertaining to the production function which is assumed to prevail in a perfectly competitive market.

When Paul H. Douglas and his associates embarked upon a gigantic task of an empirical investigation of the quantitative relationships between output of products and input of factors, one of their main intentions was to give an empirical verification to the marginalists' exposition that wages will be equated to the value of marginal product of labor in an equilibrium.<sup>17</sup> After surveying the data with respect to the United States over the period from 1899 to 1922, the economists concluded that there were laws of production and that the labor share in the U. S. manufacturing industries during this period was more or less equated to the value of marginal product of labor.

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17.

Paul H. Douglas, The Theory of Wages, New York: Kelley & Millman, 1957.





A Cobb-Douglas production function is put in its general form:  $Q = bL^aK^{1-a}$ , where  $Q$ ,  $L$  and  $K$  are output of products, labor input and capital input, respectively and  $a$  and  $b$  are the constants. The function is homogeneous of degree one and, therefore, in conformity with the properties of the Euler's theorem.<sup>18</sup> In other words, the production function describes a case of perfect competition. If the function satisfies the Euler's theorem, it is mathematically possible to deduce that the share of labor is determined by the value of the exponent of  $L$  or  $a$  and the return to capital by  $1-a$  on condition that both factors are paid their marginal value products. The proof for this statement is simple and given as follows. The marginal product of labor,  $\partial Q/\partial L$ , will be found by partially differentiating the function with respect to labor and the result gives:  $abL^{a-1}K^{1-a}$ . Since this expression depicts the wage per worker, the total wage payments must equal this amount multiplied by the number of workers, or  $L$ :  $LabL^{a-1}K^{1-a} = aQ$ . In other words, when  $a$  takes a value such as 0.75, 75 per cent of the total value of output will be paid to workers and 25 per cent to capital.

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18.

If  $z = f(x,y)$  is a linear homogeneous function of two variables, the following property holds at any point:

$x\frac{\partial z}{\partial x} + y\frac{\partial z}{\partial y} = z$ . Put, for example,  $Q = F(K,L)$ , where  $Q$ ,  $K$  and  $L$  are output of products, capital input and labor input, respectively.

If this production function is unit homogeneous, then the following relationships hold at any level of production:

$$\frac{K\partial Q}{Q\partial K} + \frac{L\partial Q}{Q\partial L} = 1.$$



Paul H. Douglas and his associates determined the numerical values of the exponents for the two factors with the assistance of the statistical data obtained in the United States. The Cobb-Douglas production function thus discovered took the form:

$Q = 1.01( L^{0.75} K^{0.25} )$ . After discovering "the apparent laws of production" in the United States, they inquired into whether or not such laws had been reflected in the actual process of distribution.

"The theory and the facts of production which have been developed in the preceding chapters indicate certain approximate influences which labor and capital respectively seem to have had upon the product of manufacturers.....

"If there has been a fairly close approximation between the relationships in distribution and those in production, then their relative agreement still further confirms the productive effects of labor and capital which we have measured and carries with it the further implication that the processes of distribution at least follow those of marginal productivity in practice as well as in theory."<sup>19</sup>

Their inquiry met an affirmative answer in part.

"When the National Bureau of Economic Research (of the United States) made its investigation into the proportion of the manufacturing product (net value added) which went to labor during the decade, 1909 - 1918, they found wages and salaries formed on the average 74 per cent of the total value added by manufacture during these years."<sup>20</sup> For the period from 1919 to 1928, the Cobb-Douglas production function exhibited an adequate fitting to the income distribution data, though a significant discrepancy was detected between the trend in labor

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19. Paul H. Douglas, op. cit., p. 173

20. ibid. p. 173.





productivity and that of wage bill in the late 1920's.<sup>21</sup>

One of the properties characteristic to a Cobb-Douglas production function is its unitary value of elasticity of factor substitution. The families of isoquant curves derivable from any Cobb-Douglas type production function are all asymptotic. If an isoquant curve approaches both K and L axes asymptotically, there will be infinite range of substitutability between the two factors of production. The production is still possible, at least conceptually even if capital input tends to zero and labor input tends to infinity or vice versa. The realism of this particular property of the function, however, is highly questionable, especially in modern manufacturing industries. The convexity attribute of an isoquant curve is the expression of the principle of increasing marginal rate of substitution, of the assumption that it becomes increasingly difficult to substitute one factor for the other as the substitution proceeds. The elasticity of substitution is concerned with how fast such a substitution becomes more difficult. In other words, it explains the relationships between the change in marginal rate of substitution and the change in factor intensity.

In Figure 3 - 4, two cases are described, one with a relatively large elasticity of substitution and the other with a relatively small elasticity of substitution. The elasticity of factor substitution, in the diagram below, may be expressed by the ratios

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21.

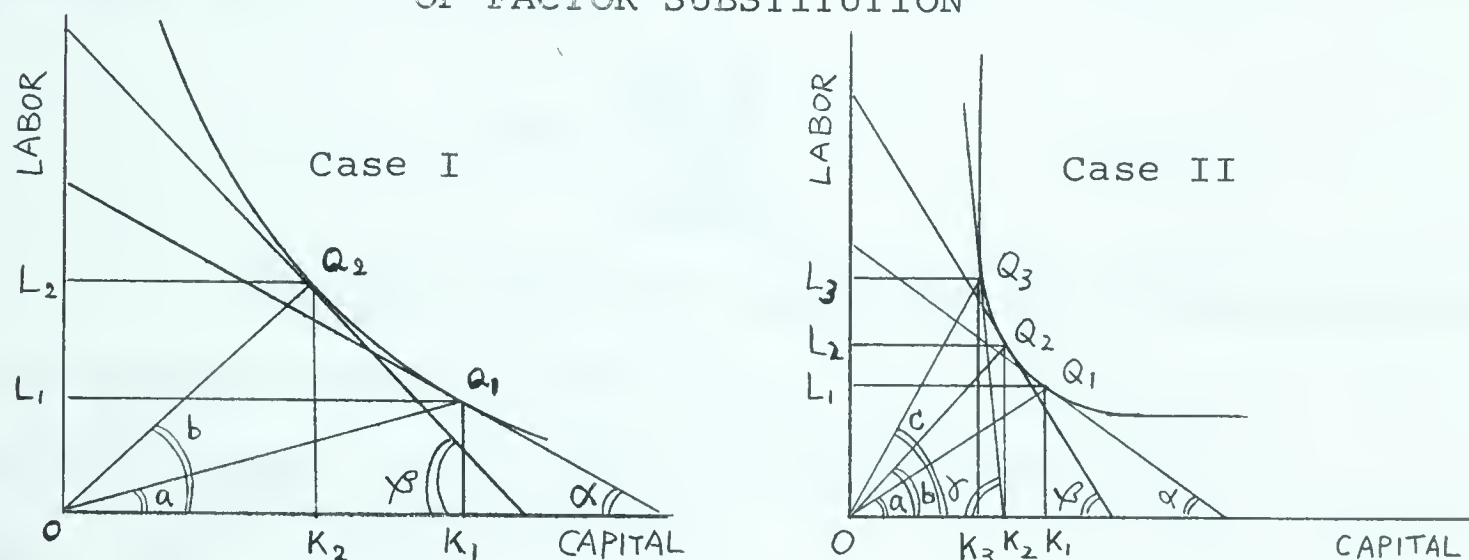
Paul H. Douglas attempted to ascribe one of the causes of the Great Depression to this discrepancy between wages and labor productivity with the implication that the depression was caused partly by the fact that labor was unfairly rewarded in the marginal productivity sense during several years preceding 1929. (ibid., p. 187)



$\frac{w}{r}$  to  $\frac{b}{a}$ . Suppose, for example, that the production is carried out initially by utilizing  $L_1$  of labor and  $K_1$  of capital with the given factor price ratio which is measured by  $\alpha$ . In the initial condition, the factor intensity is shown by the angle  $a$ . One may now assume that the factor price ratio is altered from  $\alpha$  to  $\beta$  due to the change in factor endowments.

Figure 3 - 4

AN ILLUSTRATION OF THE CONCEPT OF THE ELASTICITY OF FACTOR SUBSTITUTION



Apparently under this circumstance, the equilibrium in production moves from  $Q_1$  to  $Q_2$  with the consequences that the production becomes more labor intensive, i.e., the factor intensity changes from  $a$  to  $b$ . The responsiveness of the change in factor intensity to the change in factor price ratio depends on the magnitude of the elasticity of substitution; the factor intensity would change more significantly if given a larger elasticity of substitution and less significantly with a smaller elasticity. Putting the same phenomena the other way around, one may state that in order to let an entrepreneur alter his choice of alternative methods of production





from a capital intensive one to that of labor intensive, the relative price of labor is required to decline more drastically than otherwise if the elasticity of substitution is relatively small. In the above figure, the production function described by Case II has a small elasticity of substitution relative to Case I.

That a Cobb-Douglas production function has unitary elasticity of substitution can be shown mathematically. The elasticity of substitution of a unit homogeneous production function may be expressed by:<sup>22</sup>

$$\sigma = \frac{\frac{\partial Q}{\partial L} \frac{\partial Q}{\partial K}}{Q \left( \frac{\partial^2 Q}{\partial L \partial K} \right)}$$

Applying the above expression to a Cobb-Douglas production function which is given as:

$$Q = bL^a K^{1-a}, \quad \frac{\partial Q}{\partial L} \frac{\partial Q}{\partial K} = (ab^2 - a^2 b^2) L^{2a-1} K^{1-2a} \quad \text{and} \\ Q \left( \frac{\partial^2 Q}{\partial L \partial K} \right) = (ab^2 - a^2 b^2) L^{2a-1} K^{1-2a}.$$

Therefore, the elasticity of substitution is equal to 1 at all points when the production function takes a special form such as  $Q = bL^a K^{1-a}$ .

An application of a Cobb-Douglas production function to the explanation for international differentials in the relative share of labor in total output would probably require an independent empirical work with which to determine numerical values of the exponents for labor and capital in a particular industry in the countries compared. The statement that the exponents of L in a certain industry differs from country to country, and, therefore, international differentials in the relative labor share take place, is no better than a mere tautology. Even though different values of the exponents of K and L are discovered through an independent empirical





investigation, elaboration will be required to explain why such differences in the exponents occur despite the fact that the same industries in various countries are compared. Take, for example, the following hypothetical case.

Some technological innovations were achieved in the United States, and nylon production became possible through the combined application of labor and capital in a certain proportion. An empirical study on the U. S. nylon industry has disclosed a Cobb-Douglas type production function in existence associated with this particular industry. The nylon technology was then introduced to Japan under a licensee agreement between the two countries. A similar research with respect to the Japanese nylon industry was conducted, to yield the result that the exponent for  $L$  in the Japanese case is smaller than the U. S. counterpart. Why has this taken place? Did the nylon technology change when it crossed the Pacific Ocean? The transformation of inputs into outputs is subject to the technical rules specified by the production function concerned. The production function of a particular industry, therefore, would assume the same form regardless of the countries where the technology specified by the production function is applied.

At least theoretically, it is feasible to assume that the curvature of isoquant curves for a certain industry would not drastically differ from country to country. If it is so assumed, then the numerical values of the exponents of  $K$  and  $L$  should be the



same in the nylon industries of both countries. There exists, of course, a wide difference in factor price ratios between the two countries; the United States is richly endowed with capital and accordingly capital is cheap relative to labor, while Japan's factor price ratio is the reverse of the U. S. case. Since the nylon production function is assumed to be continuous, both countries would produce nylon by adopting the cheapest and the most efficient method available. It can be readily imagined that in the United States the nylon industry is relatively capital intensive and in Japan it is relatively labor intensive. Returns to labor on per capita basis, therefore, will be higher in the United States than in Japan. The total wage bills, however, will be the same in both countries; a smaller number of U. S. workers are paid higher per capita wages and a larger number of Japanese workers are paid lower per capita wages. The ratio of total labor income to the total value output of the nylon industries is, after all, determined by the exponent of  $L$  in the nylon production function.

The reader should now be reminded of the unitary elasticity of substitution assumed by a Cobb-Douglas production function. In the preceding hypothetical example, it was assumed that the nylon production function exhibited all the characteristics and properties pertaining to a Cobb-Douglas production function. In actuality, however, it is extremely doubtful whether a modern technology possesses such characteristics as depicted by a Cobb-Douglas production function. Especially noteworthy in this connection is the concept of substitution elasticity as well as the range of factor substitution. If the substitution elasticity of a production function





is unitary and the range of substitution is unlimited, the entrepreneur's decision on the choice of factor combination may entirely depend upon the factor price ratio. However, there is no valid empirical as well as conceptual basis to assert that the substitution between labor and capital in modern manufacturing industries is conducted in such a manner.

First, one may examine the concept of unitary elasticity of substitution. For this purpose, Figure 3 - 4 will serve as a convenient illustration. It is obvious from the curvature of the isoquant curves that the substitution elasticity in Case II is smaller than that of Case I. One may now suppose that Case I is a close approximation of a Cobb-Douglas type production function where the substitution elasticity is unitary. In Case I the angles  $\alpha$  and  $\beta$  represent the factor price ratios of relatively capital rich country and the relatively labor rich country respectively. Since the nature of technology is such that it allows unlimited range of factor substitution with the unitary elasticity, in the labor rich country  $L_1L_2$  of labor is additionally employed in substitution for capital which is measured by  $K_1K_2$ , and yet exactly the same product is being produced as in the capital rich country. The substitution elasticity is unitary, i.e.,  $\frac{\beta a}{\alpha b}$  is equal to unit. In other words, if the relative price of labor is one-third in the labor rich country, the production method in that country will be three times as labor intensive as in the capital rich country. It is then assumed that  $L_1$  and  $L_2$  co-incide with the labor full employment levels of the



two countries.<sup>23</sup> The distribution of the total value product between labor and capital in the two countries is thus determined by the exponents of labor and capital.

Let us now consider the case where the elasticity of factor substitution is less than unitary. In this case, the factor intensity would not be altered as much as implied by the relative factor price differentials. In Case II, for example, the ratio of  $\beta$  to  $\alpha$  is, say, one-third while the ratio of  $\underline{b}$  to  $\underline{a}$  is measured as two-thirds. The elasticity of substitution, therefore, is one-half when an equilibrium moves from  $Q_1$  to  $Q_2$  along the isoquant curve.<sup>24</sup> Although in Case I the unitary elasticity of substitution enables the entrepreneur of the labor rich country to substitute labor for capital, under the given factor price ratio, until the labor full employment level is reached, this would not necessarily apply to Case II. Because of the relatively small elasticity of substitution in Case II, the method of production does not become as sufficiently labor intensive as required in order to achieve a labor full employment level. One may contend this reasoning by arguing that under such circumstances, the relative price of labor would be further reduced, thus inducing the entrepreneur to employ more labor and less capital until labor is fully employed. This is certainly one likelihood, though it appears somewhat unrealistic to assume that the relative

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23.

This assumption is almost superfluous, because the labor full employment level necessarily co-incides with an equilibrium level of labor employment in a Cobb-Douglas case.

24.

In Case II the constancy of elasticity of substitution is not assumed. The elasticity may not be one-half when an equilibrium point moves from  $Q_1$  to  $Q_3$  or any point other than  $Q_2$  along the isoquant curve.





price of labor would decline almost ad infinitum.<sup>25</sup> Furthermore, in Case II the isoquant curve becomes parallel to the axis measuring labor input beyond certain point, thus implying the impossibility of further substitution of labor for capital beyond this point. Such a point is designated by  $Q_3$  where the angle of the tangency line,  $\gamma$ , approaches the right angle. The substitution of labor for capital, therefore, cannot proceed exceeding the labor intensity designated by the angle  $\underline{c}$  unless negative wage rates are introduced. If some workers are still unemployed at the level  $L_3$ , these surpluses of labor would have to remain as "technological unemployment".

As far as one adheres to a Cobb-Douglas production function where the elasticity of substitution is unitary and the range of substitution is unlimited, it is impossible to explain the possible occurrence of technological unemployment. The substitution of labor for capital would proceed continuously until surplus labor is fully employed. Under these conditions, therefore, the equilibrium price of labor in terms of capital necessarily co-incides with the real wage rates which ensure the technological labor full employment. However, this must indeed be a special case of the phenomena observable in the contemporary economy. Once these two unique properties of the production function, i.e., the unitary elasticity and unlimited range of substitution are abandoned, it is readily conceivable that technological unemployment might occur under some circumstances. One of such cases, or a case of the less-than-unity substitution elasticity, has been discussed above. In what follows,

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25.

One may assume, for example, the minimum subsistent wage level which is independent from the factor endowment.





the concept of the range of factor substitution will receive some attention.

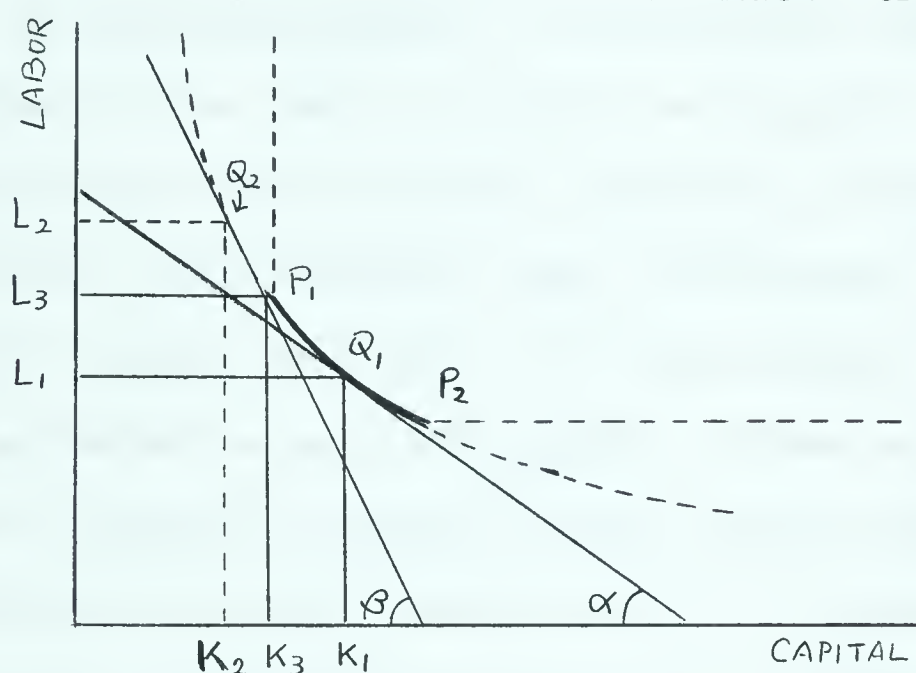
In the following diagram, the factor price ratio, the amount of capital and labor employed in a relatively capital rich country are represented by  $\alpha$ ,  $K_1$  and  $L_1$ , respectively. The production function in this case may or may not be perfectly continuous over the whole range of factor combination. As far as the segment of the isoquant curve cut out by the points  $P_1$  and  $P_2$  is concerned, the production function is known as continuous. Beyond these points no entrepreneur is sure whether the isoquant further extends continuously or suddenly becomes parallel to both labor and capital axes. In other words, the entrepreneur is aware of the only limited range of the isoquant curve, both ends of which are designated by  $P_1$  and  $P_2$ . Theoretically, it is possible to imagine that isoquant might extend continuously as far to the point  $Q_2$ . Suppose, then, that the angle  $\beta$  is the factor price ratio determined by the conditions of factor endowment in a relatively labor rich country. If such a point as  $Q_2$  were actually existent and known to the entrepreneur in the relatively labor rich country, the intensity of factor utilization in that country would be determined at  $Q_2$ . In actuality, however, technical information is not always perfect. No entrepreneur in the relatively labor rich country has access to the information on the existence of the point  $Q_2$ . This state may be even more likely when a certain technology has been developed in a relatively capital rich country. It would seldom occur to the minds of the relatively capital rich country's engineers to take into account the possibility of combining  $L_2$  of labor and  $K_2$  of capital in produc-



ing a certain commodity. In this case, the entrepreneur in the relatively labor rich country will perforce operate at  $P_1$ , regardless of the factor price ratio prevailing in his country. The surplus labor measured by  $L_2L_3$ , therefore, will result in technological unemployment.

Figure 3 - 5

AN ILLUSTRATION OF "THE RELEVANT RANGE" OF AN ISOQUANT



The purpose of the preceding analysis centering on the substitution elasticity and the relevant range of substitution is no more than to theoretically demonstrate the possible occurrence of technological labor unemployment in a relatively labor rich country. These problems have already been discussed by a score of economists, especially by those concerned with the factor-proportion problems in underdeveloped areas. No doubt that the majority of the present-day underdeveloped countries are relatively rich in labor supply. R. S. Eckous, for example, argues in this particular connection.





"It is fairly common for observers to report finding modern, capital-intensive equipment and techniques used in underdeveloped areas where relative factor prices would suggest the use of more labor-intensive techniques. I should now like to suggest that the use of the 'modern' techniques is not necessarily irrational emulation but the result of real limitations in the technological choices available, and that this, in turn, is a major source of labor-employment problems in underdeveloped areas."<sup>26</sup>

The problems of Japan's unemployment have been frequently discussed.<sup>27</sup> The cause of the persistent presence of unemployment or underemployment in the postwar Japanese economy may not be ascribed to the lack of effective demand to which case a Keynesian prescription of deficit public financing is applicable as a solution. There was not much evidence that the postwar Japanese economy suffered under a low demand pressure. On the contrary, the economy more than once experienced balance of payment crises arising from excessive buoyancy of domestic demand meeting relatively inelastic domestic supply of some specific commodities. It appears more feasible to interpret the Japanese unemployment as being caused at the factor level.

"Disequilibrium at the factor level may arise either because a single factor receives different returns in different uses or because the price relationships among factors are out of line with factor availability."<sup>28</sup>

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26.

R. S. Eckous, "The Factor-Proportions Problems in Underdeveloped Areas", The American Economic Review, September 1955, p. 544.

27.

See, for example, Shigeto Tsuru, "Employment in Japan: Problems and Prospects", Far Eastern Survey, July 1957.

28.

Charles P. Kindleberger, "Mechanism for Adjustment in International Payments--The Lessons of Post-War Experience", The American Economic Review, Papers and Proceedings, May 1952, p. 338.



Viewed from the technological aspect, the process of the postwar Japanese economic expansion has been a continued process of introductions of modern industrial technology from advanced countries in the West.

Almost all of these technologies introduced have been either invented or developed or both, in relatively labor-scarce countries.<sup>29</sup> In their choice of alternative ways of factor combination, the Japanese entrepreneurs apparently encountered the same technical limitations and restraints as have been described in Figures 3 - 3 and 3 - 4.

While the noticeable presence of unemployment or underemployment is often discussed by the observers of the postwar Japanese economy, the statistical confirmation of the phenomena is not at all evident. First of all, no relevant figures on unemployment have been so far published by the Japanese statistical authorities. One possible approximation to unemployment statistics may be the monthly publication by the Ministry of Labor on the number of workers insured against unemployment and of the recipients of unemployment insurance. These data are totally unusable for the analysis of unemployment, because only a part of the total working population is insured against unemployment and the recipients of the insurance are not necessarily involuntarily unemployed.

In the second place, no effective statistical method is available to detect and quantitatively determine "underemployment". Conceptually, underemployment may be defined as the state of employment where the marginal product of labor is equal to or less than

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29.

A selective list of Japan's technological introductions is provided in the appendix of this chapter.





zero. Statistically, however, it may be practically impossible to quantify the marginal productivity of each worker employed and determine how many workers in an economy are currently employed without net contribution to the total value of output.

An alternative method to examine employment situations may be to obtain the ratio of the number of people who are currently seeking jobs to the number of job opportunities which are offered by employers in a specified period of time. This method is a rough approximation of the labor market situations, because double counting is likely to be involved in both figures; i.e., a single person may apply for a job more than once and a single employer may offer exactly the same job opportunity more than once in a specified period of time. This double counting, therefore, may probably over-emphasize the labor market situations with either downward or upward bias, depending on the degree of strength of the labor market.

Table 3 - 14

LABOR MARKET SITUATIONS: 1953 - 1961

time period: one month  
unit of number: 1,000

Year	(A)	(B)	B/A %
1953 .....	1,008	349	34.6
1954 .....	1,166	348	29.8
1955 .....	1,283	358	27.5
1956 .....	1,199	458	38.2
1957 .....	1,180	572	48.5
1958 .....	1,407	547	38.9
1959 .....	1,341	680	50.7
1960 .....	1,191	881	73.9
1961 .....	1,139	1,093	95.9

Note: Day laborers are excluded. A = Total Number of Job Seekers.  
B = Total Number of Job Opportunities.

Source: Economic Planning Agency, Economic White Paper, 1959, 1960  
1961 and 1962.





The job placement in Japan is not solely conducted through the Public Employment Security Office by which the above figures were originally compiled.

Another important channel through which people seek jobs is the training and educational institution.<sup>30</sup> The table below shows the percentage ratios of the number of college graduates to the number of college graduates who have secured employment per year over the period from 1954 to 1961.

Table 3 - 15

EMPLOYMENT OF COLLEGE GRADUATES

unit of number: 1,000

Year	(A)	(B)	B/A %
1954 .....	112	80	71.4
1955 .....	129	86	66.7
1956 .....	142	95	66.9
1957 .....	148	105	70.9
1958 .....	150	107	71.3
1959 .....	150	109	72.7
1960 .....	154	119	77.3
1961 .....	158	126	79.7

Note: (A) = college graduates and (B) college graduates who have secured jobs.

Source: Economic Planning Agency, Handbook of Economic Statistics, Tokyo: 1963.

Since it is believed that not more than ten per cent of the college graduates pursue the post-graduate work at the universities, it may be inferred from the above figures that approxi-

30.

For details of Japan's employment practices, see James C. Abegglen, The Japanese Factory, Glencoe, Illinois: The Free Press, 1958, and also Koji Taira, "The Characteristics of Japanese Labor Markets", Economic Development and Cultural Change, January, 1962.



mately 20 per cent of these college graduates could not secure employment every year during the period under review. Although they are indeed rough approximations, the data in Tables 3 - 14 and 3 - 15 may be interpreted as indicating the weakness of the Japanese labor market. This weakness, however, would not be a long duration, as the figures since 1960 are already indicative, and a marked expansion of Japan's productive activities in the past few years is believed to have absorbed substantial portions of the country's surplus labor.

One of the immediate effects of the presence of the technological unemployment as defined elsewhere in this section will be manifested in the determinations of real wage rates. The marginal productivity theory states that in an equilibrium all factors of production will be fully employed and both labor and capital are paid their marginal contribution to the total value of output. It is essential in this connection to note that the theory requires one fundamental assumption that an equilibrium level of employment necessarily co-incides with full employment level. It is, therefore, inferable from the theory that if a worker is not paid his marginal value productivity in a certain industry, he will probably leave that industry and find an employment in some other industry where he may expect to be rewarded more properly, or paid his marginal value product. The presence of unemployment or underemployment, however, will change the whole picture significantly. The existence of workers currently unemployed or underemployed may imply that entrepreneurs can hire these workers at the wage rate which is slightly higher than their current earnings; and one may expect that the





current earnings of the unemployed or underemployed approximate their minimum subsistent cost of living which is, of course, determined quite independently from the marginal productivity which these workers might exhibit when properly employed. The determination of the prevailing wage rates under these circumstances, therefore, would not quite follow the marginal productivity principles.

"The main sources from which workers come as economic development proceeds are subsistence agriculture, casual labor, petty trade, domestic service, wives and daughters in the household, and the increase of population. In most but not all of these sectors, if the country is overpopulated relatively to its natural resources, the marginal productivity of labor is negligible, zero, or even negative. The subsistence wage at which this surplus labor is available for employment may be determined by a conventional view of the minimum required for subsistence."<sup>31</sup>

One may now tentatively conclude that during the post-war period, Japanese entrepreneurs managed to maintain the real wage rates at a relatively low level because of the existence of technological unemployment and underemployment. This tentative conclusion probably requires a statistical confirmation of the evidence that considerable portions of the workers in modern sectors were supplied by the surplus labor in "subsistence agriculture, casual labor, petty trade, domestic service, wives and daughters in the household." The following table is a comparison of the patterns of distribution of the labor force actively engaged in various industries for the years of 1953 and 1961. It is clearly noticed in the table that there was a remarkable increase in the number of manufacturing and construction workers and those in service industries while the agricultural and forestry population substantially decreased in numbers.

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<sup>31</sup>. W. Arthur Lewis, "Economic Development with Unlimited Supplies of Labour", The Manchester School of Economics and Social Studies, May 1954, p.189.



Table 3 - 16

DISTRIBUTION OF WORKING POPULATION  
1953 and 1961

unit: 1,000

Year	Total	Agricul. and fores.	Mfg. and construc.	Services*	Civil servant	Mining
1953	39,460	16,950	8,300	11,560	1,250	620
1961	45,110	13,840	12,700	16,230	1,350	490

\*Services include banking, insurance, trading, transportation, public utilities, advertisement, journalism, education, and so forth.

Source: Economic Planning Agency, Handbook of Economic Statistics, Tokyo: Economic Planning Agency, 1963.

Another important source of cheap labor supply was the minor-scale enterprise, or "petty trade" in the Lewis terminology, where the workers were paid extremely low wages. The wage differentials between large and small scale enterprises were especially noticeable in the postwar Japanese economy, as shown in the following table.

Table 3 - 17

SCALE OF ENTERPRISES AND WAGE DIFFERENTIALS :  
AN INTERNATIONAL COMPARISON

Scale	Japan ( 1955)	U.S.A (1954)	U.K. (1949)	Germany (W) (1951-52)
1 - 9 men	--	63.0	--	81.7
4 - 9	40.0	--	--	--
10 - 49	45.7	75.6	82.5)	87.8
50 - 99	53.5	81.9	83.7)	
100 - 499	64.8	82.9	85.5)	91.6
500 - 999	79.1	88.9	89.3)	
1,000 and over	100.0	100.0	100.0	100.0

Source: Kotaro Tsujimura, "Employment Structure and Labor Share" in Ryutaro Komiya, et. al., Economic Growth in Postwar Japan, Tokyo: Iwanami Shoten, 1963, p.109.





We shall hereafter discuss the pattern of age distribution of the working population as a significant factor determining the total payment for workers. It is a well-known phenomenon for the observers of the Japanese economy that the practice of wage determination is heavily dependent upon the seniority basis.

"Under the traditional system 'Nenko Joretsu Sei' (seniority-based ranking system), the wages and promotion of an employee are determined not by his job classification, nor by his ability to discharge his duty, but simply by his length of service."<sup>32</sup>

The practice of wage-by-seniority has no theoretical basis. It is a mere social convention and many social practices, including this one, are often die-hard and sometimes play on top of economic principles. The productivity of workers is largely determined by their skill and ability, and the skill of workers is not necessarily the function of the length of service. There is a good reason to believe that the recent technological development has been working toward diffusing the skill of productive activities more evenly among the workers of various age groups. Furthermore, one may even assert that in the age of rapid technological advancement, younger workers fresh from up-to-date occupational training are often more productive than those who have passed through the door-step of senility. Under this practice, therefore, one may expect that the relationships between labor productivity and real wage rates would be distorted to a certain extent depending on the age composition of the total labor force. If, for example, the majority of the working population is occupied by relatively young people, the total wage bill would not be as much as normally expected in terms of the current labor productivity.

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<sup>32</sup>. Ida R. Hoos and Brownie Lee Jones, "Office Automation in Japan," International Labour Review, June, 1963. p.559.





"Due to the wage differential by age, the wage level or wage cost expressed in average figures tends to underexpress the actual condition, especially in cases where the greater part of employment is made up of young workers whose wages may be low, but nevertheless up to the standard."<sup>33</sup>

As shown in Table 3 - 18, the average wage index for workers between 40 and 49 years of age is almost twice as high as that for the 20 - 24 years old group.

Table 3 - 18

WAGE DIFFERENTIAL BY DIFFERENT AGE GROUPS  
(MALE WAGE EARNERS IN MANUFACTURING INDUSTRY: 1961)

Age groups	Wage differential index
17 or younger .....	54.7
18 - 19 .....	76.9
20 - 24 .....	100.0
25 - 29 .....	130.0
30 - 34 .....	160.5
35 - 39 .....	181.7
40 - 49 .....	198.3
50 or older .....	163.9

Source: Basic Survey of Wage Structure, 1961,  
Tokyo: Ministry of Labor.

The age composition of workers appears to show a greater percentage of relatively younger people than other industrial countries, say the United Kingdom. During the postwar period, there was a large yearly increase of those entering the labor market after finishing schooling, and, consequently, a continued growth in the amount of employment of relatively young workers.

<sup>33</sup>. Wage Problems in Japan, Tokyo: Ministry of Labor, 1962. p.16.



Table 3 - 19

AGE COMPOSITION OF WORKERS IN THE MANUFACTURING  
INDUSTRY: AN INTERNATIONAL COMPARISON, 1961

Age groups	Japan	(cumul.)	U. K.	(cumul.)
24 or younger....	45.7%	45.7	22.9	22.9
25 - 34 .....	25.8	71.5	19.7	42.6
35 - 49 .....	21.4	92.9	31.7	74.3
50 and over.....	7.1	100.0	25.7	100.0

Sources: Basic Survey of Wage Structure Tokyo: Ministry of Labor, 1961. and Ministry of Labor Gazette, June 1962. London: Ministry of Labour.

It was, of course, a historical coincidence that the postwar period in Japan was relatively richly endowed with young workers.<sup>34</sup> This historical coincidence, coupled with Japan's traditional wage determination practice, played a significant role in preventing the elevation of the wage level as a whole during the postwar period.

#### E. Some Aspects of Credit Creation<sup>35</sup>

The preceding analysis has been primarily concerned with the ex post concept of capital formation. Capital is formed not only out of current profits and savings, but also of credit creation. In an ex ante sense, planned investments are not necessarily equal to intended savings; and the gap which might exist between them would not necessarily cause inflation or deflation if credit

<sup>34</sup>. The rate of population increase in Japan during the period from 1925 to 1935 was approximately 15 per one thousand, one of the highest in the world in those days. Over the immediate postwar period, the rate was in the neighborhood of 30 per one thousand, but drastically declined to 8 to 10 toward the late 1950's and early 1960's.

<sup>35</sup>. Apparent criticism of this section would be that the role of banks is almost completely neglected. The author admits this; and an emphasis should be put on the term "some aspects."







expansion or contraction mechanism is in proper operation.

The monetary authority can control supply of money through banking mechanism by means of (1) open market operation, (2) discount operation, (3) alternation of required reserves, and (4) moral suasion. ~~Q.Q.~~ The effectiveness of money expansion as a creator of additional capital formation largely depends upon the magnitude of physical supply elasticity. Let us assume for the moment that the physical supply elasticity is infinite. This is the case which is assumed by the Keynesian system under certain conditions of less than full employment. Keynes and his followers believed that during the 1930's there existed considerable amount of labor as well as capital which were not quite fully utilized for production because of the lack of investment opportunities. If additional purchasing power is injected into such an economy under certain conditions above the liquidity traps through credit creation, then the idle capacities would regain their roles as the creator of value. This concept of physical supply elasticity is a ~~static~~ static one, or at best one of comparative ~~statics~~ statics. In other words, it is implicitly assumed in the Keynesian system that the physical supply elasticity in the initial condition does not change over time. This static assumption can easily be abandoned once it is realized that in an actual economy, the physical supply elasticity itself also changes over time. Theoretically, one may state that the change in physical supply elasticity depends upon the change in physical supply capacity <sup>36</sup> over period of time.

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36. More accurately, the physical supply elasticity is determined by the quantitative relationships between physical supply capacity and effective demand. It is assumed here that effective demand is a strategic variable, i.e., a variable directly controllable through credit expansion or contraction.



The current physical supply capacity in turn is determined by the current productive capital stock. Let us assume that in the initial condition a positive net saving-investment equilibrium is achieved with all factors of production being fully employed. Even under these conditions, it would be wrong to assume that the physical supply elasticity of this economy would be necessarily zero.<sup>37</sup> The supply capacity would grow over time.

Designating the physical supply capacity with respect to time as  $\frac{dK}{dt}$  which can be measured in terms of output value, i.e., the additional physical supply capacity capable of producing some dollars' worth of commodities, and the marginal value of credit creation with respect to time as  $\frac{dM}{dt}$ , one may hold that if  $\frac{dK}{dt} = \frac{dM}{dt}$  is maintained over time, the economy would not encounter inflation or deflation, even if the whole process has started from a full employment equilibrium.<sup>38</sup>

Viewing the phenomena from this angle, one may realize how crucial it is to examine at what rate the physical supply capacity actually grows in an economy. One possible approximation in the measurement of  $\frac{dK}{dt}$  is to define  $dK$  as the function of the current rate of productive investment. The capacity creating role of investment has received a considerable attention by scores of economists, especially since the appearance of the classical works by R. F. Harrod and E. D. Domar.<sup>39</sup> It is conceptually feasible to

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<sup>37</sup>. The orthodox Keynesian system assumes that the physical supply elasticity at full employment level is zero.

<sup>38</sup>. In the expression  $\frac{dK}{dt}$ , it should not be interpreted that  $dK$  designate the additional net productive investment measured in value terms. It is assumed here that one can measure next period's physical supply capacity in terms of current value of net productive investment.

<sup>39</sup>. E. Domar, "Capital Expansion, Rate of Growth and Employment", *Econometrica*, April, 1946. R. F. Harrod, *Toward a Dynamic Economics*, London: Macmillan, 1949.





to associate the rate of net productive investment in the initial period with the increment of physical supply capacity in the second period. Furthermore, the figures for private net fixed capital formation in national income accounts may be regarded as an index of the current rate of productive investment.<sup>40</sup> If it is possible to forecast the rate of growth of physical supply capacity over period of time with a fair accuracy, one can maintain a full employment rate of economic growth simply by adjusting the total purchasing power of an economy to the next year's physical supply capacity through the control of credit creation.

The a priori concept of dynamic capital/output ratio, i.e., the ratio of the initial period's net productive investment to the second period's additional supply capacity, is justifiable and even in actual economy there must exist the similar relationships. However, when it comes to empirical application of this concept for the purpose of projection of the future supply capacity on the basis of the current investment data, things do not turn out so nicely. First of all, the constancy of the dynamic capital/output ratio is highly questionable. The possible irregularity of this ratio may imply that it cannot be used as a reliable parameter. The dynamic capital/output ratio may differ significantly, depending on the period used in measurement. One possible method to measure the dynamic capital/output ratio as defined above will be  $\frac{K_t - K_{t-1}}{O_{t+1} - O_t}$ , where  $K_t$  and  $K_{t-1}$  are the productive capital stock in the periods  $t$  and  $t-1$  and  $O_t$  and  $O_{t+1}$  are GNP in the periods  $t$  and  $t+1$ , respectively. For an accurate measurement of the ratio, both  $K_t$  and  $K_{t-1}$  should be net of the current idle capacities. Since

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40. Public sector investments are often indirectly productive, such as road construction.





it is quite unrealistic to assume the constancy of the rate of capacity utilization over time, the constancy of the dynamic capital/output ratio is also hard to accept.

Granted that all these problems are cleared up and both  $K$  and  $Q$  are measured net of idle capacities and of the possible differences between realized and potential GNP, some questions still remain to be asked: the different length of period required in order for various kinds of capital investments to be materialized as productive capacity and the problems of discontinuity of capacity realization. Take, for example, the case of a hydro-electric power station which requires the construction period of ten years. In the second year, it is assumed that one tenth of the power station has been completed. Can we say, then, that in the second year the power station will generate one tenth of the power which it is supposed to generate when the whole work is completed? The aggregate statistical figures for annual investments are the unweighted total of all kinds of investment, some of them requiring a relatively short period to be materialized as productive capacity and other relatively long period. This problem may be solved by disaggregation, possibly by disaggregation into industries. For this purpose, some specific methods of industry classification should be devised; methods of industry classification not in terms of the kinds of products but in terms of the length of period required for capacity realization. These technical difficulties have been yet largely unsolved. However, putting aside these difficulties for a moment, one may still attach some value to the concept of dynamic capital/output ratio as a convenient and meaningful framework for a macro dynamic analysis.



How significant a role did the credit creation play in the process of capital accumulation in the postwar Japanese economy? This is indeed a legitimate question, though answering it quantitatively with a reasonable accuracy appears to be almost impossible. Clearly, a considerable portion of gross domestic capital formation was financed through credit creation. The real GNP was more than doubled over the period from 1953 to 1961. If money supply had been fixed and the velocity of money circulation had been held constant, the price level would have been reduced to less than one-half. One may also maintain that the rate of credit expansion was more or less counterbalanced by the rate of growth of physical supply capacity during the period, since the economy did not witness any serious inflation.

The domestic credit<sup>41</sup> was increased from 3,849 in 1953 to 17,225 billion yen in 1961 in current price,<sup>42</sup> significantly contributing to creating additional effective demand. Roughly speaking the effects of credit creation on the aggregate demand would be two-fold; the effect on consumption expenditure and the effect on capital formation. Let us assume that (1) the current income is the sum of the current consumption and investment expenditures, (2) the current consumption is the function of the current income and financial parameter, and (3) the current investment is the function of expected future income, current capital stock and a financial parameter. Symbolically, it may be put as follows:

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41.

Domestic credit is defined as the sum of claims on Government (net), claims on private sector and commercial bank's claims on local Governments less local Governments' deposits in commercial banks.

42. These figures are, of course, of flow concept. Source: International Monetary Fund, International Financial Statistics, December, 1963.







$$Y_t = C_t + I_t$$

$$C_t = F(Y_t, i')$$

$$I_t = F(Y_e, K, i).$$

It is held further that the financial parameters in consumption function ( $i'$ ) and the one in investment function ( $i$ ) do not take the same value. These financial parameters will be determined by the credit situations in consumption and investment sectors of an economy. The financial parameter in the consumption function, for example, will be significantly influenced by the interest rates and the maximum amount of consumer loan available as well as the maximum length of loanable period and also by the minimum amount of security required. Similarly, the financial parameter in the investment function is dependent upon; (1) interest rates of bank advances to business sectors, (2) the length of inter-company credit or the so-called promissory note issued among trade partners, and (3) the amount of security requirement in the issuance of promissory notes. The effects of credit creation upon consumption and investment, therefore, are largely dependent on the relative magnitudes of these financial parameters. If  $i > i'$  holds over time, ceteris paribus, the credit creation will be investment-biased and in case  $i < i'$ , the expansion of credit will be consumer-biased.

There is some statistical evidence that the credit creation during the postwar period was investment-biased. In the first place, one can examine the relative significance of consumer credit. One possible approach in this regard is an international comparison of the percentage ratio of interests paid on consumers' debt in national income.



Table 3 - 20

THE PERCENTAGE RATIOS OF INTERESTS ON CONSUMERS'  
DEBT TO NATIONAL INCOME: AN INTERNATIONAL COMPARISON,  
1952 - 1961

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
U.S.A.....	0.90	1.10	1.19	1.26	1.37	1.43	1.47	1.46	1.59	1.63
Canada.....	0.24	0.33	0.38	0.40	0.44	0.47	0.50	0.52	0.55	0.57
Japan.....	0.23	0.27	0.33	0.30	0.29	0.30	0.35	0.32	0.32	0.33

Source: Yearbook of National Accounts Statistics 1959, 1962. New York: United Nations.

Among the factors determining the size of the financial parameter in investment sectors (i), trade credit appears to be of some importance. Trade credit is created when one firm purchases some commodities from others by means of the issuance of the former's promissory note to the latter. The issuance and acceptance of a promissory note are simultaneous with respect to a single transaction. The credit-creating effect of a promissory note largely depends upon the length of note (such as one week or one month due, etc.) as well as on the amount of security required on the part of issuers. If, for example, the length of note is infinite and the amount of security is zero, a promissory note will assume exactly the same role as money. The credit-creating effect of a promissory note, therefore, is the increasing function of the length of the note and the decreasing function of the amount of security required. Statistical examinations of the effect of trade credit are extremely difficult. Besides, trade credit as a subject in economics has not received much attention by academic economists. One important reason for this neglect, as R. F. Henderson points out, is the lack of reliable infor-





mation in this field.

"There is nothing equivalent (in the field of trade credit) to the statistics on bank advances published by the British Bankers' Association or those on new issues by the Midland Bank. Whereas for the study of bank credit to industry, company accounts are one of two possible sources of information, for the study of trade credit there is no second source. Trade credit is given and received largely within the sector comprising manufacturing and distributing companies."<sup>43</sup>

The data on total amount of promissory notes issued and accepted within a year among companies is utterly unobtainable. A second best source of information on the relative significance of trade credit will be balance sheets through which one can learn how much note receivable and payable is outstanding at certain points of time. The percentages of promissory notes payable outstanding to the total liquid liabilities, for example, may serve as an approximate index of the relative significance of trade credit in company financing.

The minimum amount of security required on the part of issuer of the promissory note payable is usually kept secret by companies and no information is available in this regard. On the length of note some data are available.

It is generally argued that the role of promissory notes in company financing is chiefly confined to the financing of inventories. This argument may be valid, and, consequently, it may be implied that the possible effect of trade credit upon fixed capital formation should not be emphasized. However, the demarcation line between inventories and fixed capital formation is often very vague

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<sup>43</sup>. R. F. Henderson, "Trade Credit", in Brain Tew and R. F. Henderson, Studies in Company Finance, London: Cambridge University Press, 1959, p.92.





in actuality. Under an ordinary statistical classification, business expenditures on the purchase of raw materials are recorded as inventories in a certain period, but some of these raw materials would be embodied in a fixed capital formation in the next period. Therefore, it would be more appropriate, at least realistically speaking, to group both inventories and fixed capital formations together and classify them as the expenditures in business sector. Furthermore, it appears to be frequently observed, in the Japanese economy, that a business firm purchases productive equipment through trade credit and the executives' decision to purchase such items often depends upon the availability of trade credit. Indirect as well as direct effects of trade credit expansion upon the domestic capital formation, therefore, can hardly be ignored.

Table 3 - 21

THE RELATIVE SIGNIFICANCE OF TRADE CREDIT IN COMPANY FINANCING; CASES OF THE UNITED STATES AND JAPAN: 1952 - 1959

Year*	JAPAN					
	Promissory note receivable			Promissory note payable		
	(A)	(B)	(C)	(A)	(B)	(C)
1952	14.95	21.73	1.45	20.14	35.21	1.87
1953	16.23	24.99	1.64	20.08	37.30	1.99
1954	15.72	26.32	1.76	18.03	35.92	2.01
1955	17.30	29.37	2.02	15.99	33.71	1.86
1956	18.33	31.35	1.94	16.90	34.38	1.74
1957	16.68	27.99	1.87	18.29	34.05	2.00
1958	16.14	28.95	2.09	14.49	28.48	1.87
1959	18.85	34.52	2.32	15.00	30.08	1.85



Table 3 - 21 (continued)

Year*	U. S. A.					
	Promissory note receivable			Promissory note payable		
	(A)	(B)	(C)	(A)	(B)	(C)
1952	--	--	--	--	--	--
1953	--	--	--	--	--	--
1954	11.25	22.65	1.11	6.44	29.65	0.64
1955	--	--	--	--	--	--
1956	12.65	25.53	1.24	7.20	32.66	0.71
1957	--	--	--	--	--	--
1958	--	--	--	--	--	--
1959	--	--	--	--	--	--

Notes: (A) = percentages of total assets or liabilities, (B) = percentages of liquid assets or liabilities, and (C) = length of time (month).

\*For Japan, the end of March every year, and for U.S.A., the end of every calendar year.

Above figures are estimated from the published balance sheets of 196 representative U. S. firms and 410 Japanese corporations.

Source: Mitsubishi Economic Research Institute, Growth and Profitability of Business Enterprises, Tokyo: Toyokeizai, 1961. p. 260.

#### F. Summary

Some problems of domestic capital formation in the post-war Japanese economy have been discussed in this chapter. Starting with a discussion on the conceptual basis of national income account techniques, the chapter has revealed statistically; (1) gross domestic savings mostly originated in non-household sectors of the economy, and (2) the pattern of income distribution might be regarded as a factor contributing to a relatively high rate of non-household savings in the postwar Japanese economy. These statistical findings





were then followed by analyses on the probable factors determining the Japanese pattern of income distribution. In this connection, the marginal productivity approach was examined in an empirical setting and also problems of age distribution of the working population were analysed in their relationships to the traditional wage determination practices in Japan.

Finally, some aspects of credit creation mechanism were discussed with special emphases upon the effects of consumer credit and trade credit on consumption and investment expenditures. The gist of the arguments in this context was that credit creation is not necessarily "neutral" in terms of its impact upon consumption and investment expenditures and that in the postwar Japanese economy the credit creation mechanism was investment-biased.



APPENDIX TO CHAPTER III

A SELECTIVE LIST OF TECHNICAL INTRODUCTIONS  
IN THE POSTWAR PERIOD\*

Technology	Japanese Company	Foreign Company	Years
(1) THERMO-ELECTRIC GENERATOR:			
Steam turbine and turbo-generator	Hitachi Manufacturing	International G.E.	1952
Water-pipe steam generator	Hitachi Manufacturing	Babcock & Wilcox	1952
General design of thermo-electric power station	Toshiba Electric	International G.E.	1956
Steam generator	Toshiba Electric	Foster Wheeler	1952
General design of thermo-electric power station	Mitsubishi Electric	Westinghouse	1951
Steam turbine in general	Mitsubishi Electric	Escher Wyes	1952
Boiler and related equipments	Fuji Electric	Vereinigte Kesselwerke	1952
Thermo-control of water supply system	Fuji Electric	Atlas Werke	1957
(2) AMMONIA INDUSTRIES:			
High-pressure cracking and synthesis of methane	Toyo Koatsu	Grand Parowers	1958
Cracking of methane	Tohoku Fertilizer	Montecatini	1959

\*This is not a comprehensive list of the influences of foreign technology upon Japanese manufacturing industries. The influence of foreign technology will be brought in not only through licensee agreements between foreign firms and those of Japan, but also through Japanese firm's purchase of equipments and machinery which have been developed and manufactured in foreign countries. In the latter category is included the Japanese steel industry which vastly increased productivity through the introduction of cold and hot strip mills which were mostly imported from Germany(W) and the United States.



Technology	Japanese Company	Foreign Company	Years
High-pressure cracking and synthesis of methane	Nippon Gas Chemical	C. C. C.	1959
High-pressure cracking and synthesis of methane	Toyo Gas	Grand Parowers	1958
Urena synthesis	Ube Kosan	Montecatini	1956
Cracking of petroleum	Sumitomo Chemical	Grand Parowers	1958
Urena synthesis, cracking and synthesis of methane	Mitsubishi Kasei	Montecatini	1958
(3) SYNTHETIC FIBER AND YARN:			
Nylon	Toyo Rayon	Du Pont	1951
Nylon	Nippon Rayon	Inventa	
Polyester	Toyo Rayon	Imperial Chemical	1957
Polyester	Teikoku Rayon	Imperial Chemical	1957
Vinyliden chloride	Kureha Chemical	Dow Chemical	
Vinyliden chloride	Asahi Dow	Dow Chemical	
Acryro-nitrile	Mitsubishi Kasei	American Chemstrand	
Acryro-nitrile	Asahi Kasei	American Chemstrand	
Acryro-nitrile	Kanegafuchi Chemical	American Thianamide	
Acryro-nitrile	Toyo Spinning	American Thianamide	
(4) PETRO-CHEMICAL INDUSTRY:			
Secondary butanol and methylketone	Maruzen Oil	Chemical Project	1955
Benzene, toluene, and xylene	Maruzen Oil	U. O. P.	1957
Benzoic acid, phthalic anhydride, iso-phthalic acid, and tele-phthalic acid	Maruzen Oil	Scientific Design	1958





Technology	Japanese Company	Foreign Company	Years
Iso-propanol, acetone and ethylene	Nippon Petro-Chemical	Stone and Webster	1956
Butadiene	Nippon Petro-Chemical	Esso Research	1957
Polyethylene	Showa Yuka	Phillips (Brown)	1957
Polyethylene	Furukawa Chemical	Standard Oil Indiana	1957
Styrene-butadiene-rubber	Nippon Zeon	Goodrich Chemical	1957
Benzene, toluene, and xylene	Mitsubishi Oil	U. O. P.	1956
Polyethylene, ethylene	Sumitomo Chemical	Imperial Chemical	1955
Ethylene, poly-ethylene, ethylene-oxide, ethylene-glycol, cumene, phenol, acetone, benzene, toluene, xylene, tele-phthalic acid	Mitsui Petro-Chemical	Stone and Webster, Ziegler, Scientific Design, Distillers, and U. O. P.	1956
Ethylene, poly-ethylene, ethylene-monomer, ethylene-oxide, ethylene-glycol	Mitsubishi Yuka	Stone and Webster, B. A. S. F., B. P. M. Scientific Design	1957
Butadiene, styrene-butadiene-rubber	Nippon Synthetic Rubber	Esso Research Goodyear	1958
Ethylene-monomer, polyethylene	Asahi Down	Dow Chemical	1958

Source: Showa Dojin Kai, Technology and Inter-Company Competition, Tokyo: Toyokeizai, 1960.



## Chapter IV

### AN ANALYSIS OF EXPORT GROWTH

The importance of foreign trade is particularly great in countries that lack basic raw materials for industrial production and are obliged to import almost all their raw materials. In such countries exports may easily become the limiting factor of productive investment and the successful development of the economy. In this connection, A. J. Brown points out, referring to the case of the United Kingdom.

"It is extremely important to realize that there are relatively few countries in the world which could not support their present population at some standard of life or other without intercourse with the outside world. Britain is possibly one of the exceptions, and even here it is not certain that we could not maintain our population at all without international trade. It is certain, however, that the standard supportable under these conditions would be extremely low."<sup>1</sup>

No doubt that Japan is another exception in this respect. When an American economic geographer surveyed Japan's natural resources, commissioned by the Supreme Command of the Allied Powers in the early 1950's, he remarked this.

"If even the 1930 - 34 standard is to be met, Japan is confronted with the necessity of importing, for domestic use alone, at least one-fifth of its food

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<sup>1</sup>. A. J. Brown, Applied Economics London: George Allen and Unwin, 1951. p.209.





requirements, more than half of its wood and fiber requirements, more than one-quarter of its potash, half of its iron, four-fifths of its lead, and substantial portions of its salt, all its aluminum, phosphate, and nearly all the tin, antimony, and many other minor items. During the postwar years these problems have been met by underconsumption, to a minor degree by the consumption of previously accumulated stocks, and in part through the credits obtained from exports. But a major share of the imports has been made possible through United States and other Allied aid."<sup>2</sup>

Edward Ackerman's conclusion was that Japan would remain a continued burden of American taxpayers in view of the country's feeble economic structure and abominable incapability of creating foreign exchange surplus through exports, by which the country had to import basic necessities to support a reasonable standard of living of her people. It seems, however, that while Edward Ackerman proved to be a qualified economic geographer in pointing out Japan's frightening poverty of natural resources, his prophesy about the future outlook of the country's position in international trade turned out to be wrong. Over the period from 1953 to 1961 Japan achieved highly successful economic development without relying upon foreign aid from the United States or others and by 1963 the country came to share the burden of donor countries of economic assistance for less-developed nations. The poverty of natural resources itself has remained unchanged since the prophesy of Edward Ackerman. What actually changed was Japan's competitiveness as an exporting country of the world. Japan's dependence on imports is still extremely great and would remain so unless rich natural resources should be miraculously discovered within her territories, or some revolutionary technological innovations should be achieved to enable people

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2.

Edward A. Ackerman, Japan's Natural Resources and Their Relation to Japan's Economic Future, Chicago: University of Chicago Press, 1953, p.564.



to extract energy out of sea water.

Table 4 - 1

JAPAN'S DEPENDENCE ON IMPORTS: 1956

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Rice.....	6.8%
Wheat.....	62.3
Soybeans.....	62.8
Sugar .....	93.6
Phosphate rock .....	100.0
Raw cotton .....	100.0
Wool.....	100.0
Iron ore .....	81.2
Coking coal .....	26.6
Salt .....	78.6

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Note: Calculated by dividing the volume of imports  
by the sum of imports and domestic production.

Source: Jerome B. Cohen, Japan's Postwar Economy  
Bloomington: Indiana University Press,  
1958. p.123.

The main task of this chapter is to discuss the importance of international trade to the Japanese economy. Specifically, the following topics will be considered: (1) the pattern of Japan's imports in special conjunction with the country's policy of import restriction, (2) an analysis of the directions of Japanese exports in terms of trade matrix and export intensity index, (3) statistical examinations of the growing trend of Japan's exports and its international comparison, and (4) some problems concerning the current exchange rate of yen and a quantitative proof of the proposition that yen is currently undervalued against the present-day world hard currencies.





Table 4 - 2

BALANCE OF TRADE : 1952 - 1961  
unit: million U. S. dollars

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Imports	1,925	2,314	2,209	2,174	2,931	3,996	2,930	3,575	4,476	5,861
Exports	2,239	2,120	2,309	2,668	3,225	3,612	3,441	3,914	4,588	4,771

Source: Handbook of Economic Statistics Tokyo: Economic Planning Agency, 1963

#### A. The Pattern of Imports

The pattern of Japanese imports during the postwar period was under definite influences of the Government policy of import restrictions and foreign exchange control. Practically all imports were subject to individual import license, the issuance of which was under the strict control of the Ministry of International Trade and Industry. In addition to the import licensing system, the Government exercised control over what and how much was to be imported by setting up the foreign exchange budget every fiscal year. The highest control authority on the policy level was the Ministerial Council whose main function was to draft exchange budgets every fiscal year. The Ministry of International Trade and Industry conducted exchange and trade control policy regarding merchandise transactions, while the Ministry of Finance, through its Foreign Exchange Bureau, and the Foreign Exchange Council prescribed currency and method of settlement of import payments, the operation of the foreign exchange fund, payments for non-merchandise transactions, and capital transactions and transfers. How much deficits





or surpluses should be run by the foreign exchange budget was subject to the judgement of the Ministerial Council; and the Council would set up what it believed to be the minimum level of foreign exchange reserves--roughly one billion U.S. dollars on the average. When there appeared the sign that the foreign exchange reserve might drop below the safety level, the Ministries concerned would issue warning to importers in general and other related enterprises to the effect that they should slow down import activities. If the foreign exchange reserve actually broke the minimum level, the Ministries could exercise the direct control over imports by refusing either granting import licenses or allocating foreign exchange to importers.

The import licensing procedures were: (1) Under the exchange allocating system covering imports of foodstuffs, basic raw materials, and other essential commodities, the importer had to first obtain from the trade control authorities an allocation of foreign exchange appropriate to the designated sources of the imports; if the allocation was granted, the importer could receive import licenses automatically upon application: (2) Under the global quota system, the same procedure as described above was followed, except that the import certificates were issued by the authorities concerned regardless of the countries of origin or the currency of settlement: (3) Under the automatic approval system, licenses for specified commodities were issued on application, provided that the amount appropriated for the currency area or open account country concerned had not been used up; under this system there was no quantitative limitation for each commodity



importable, but there was a maximum amount of foreign exchange assigned to each currency area or open account country for all eligible items, so that further application were likely to be turned when the budgeted amount had been exhausted: (4) Under the "first come, first served" procedure, the "Import Announcement" specified both the maximum amount of exchange and the sources of import for each commodity; when the total of the applications received exceeded the outstanding balance appropriated for a particular commodity from a particular source, decisions were made by balloting; however, this system was not practiced frequently.

The import licensing procedures underwent considerable changes during the postwar period and import liberalization was in progress steadily year after year. By 1961, for example, 70 per cent of Japanese imports had been practically liberalized under the following procedures; (1) foreign exchange allocation system, (2) automatic fund allocation system, and (3) automatic approval system. Under the automatic approval system, imports were in effect free from quantitative restriction, since import licenses for commodities specified under this system were issued freely by the authorized foreign exchange banks upon application, up to the total amount appropriated for the system in the exchange budget, and additional amounts were provided if the original appropriation had been exhausted. All items subject to the automatic approval system could be imported from any country.

Through import licensing systems and foreign exchange control, the Government heavily influenced the pattern







of Japanese imports during the postwar period. Imports of basic raw materials, food stuffs and capital goods which could not be manufactured domestically due to technological limitations were given priorities while imports of those items which were competitive with domestically produced goods were discouraged. Generally speaking, no appreciable amount of import licenses and foreign exchange allocation were provided for consumer goods. When some consumer product appeared in technologically advanced countries, the Government would encourage private enterprises to introduce such a technology, and granted import licenses as well as foreign exchange to the enterprises for the purchase of know-how and equipment to "domesticize" such an industry, but positively refused to issue licenses for the importation of the finished product itself.

Table 4 - 3

PERCENTAGE DISTRIBUTION OF IMPORTS  
1960

currency unit: million U.S. dollars

Items	Value	Percentage
Foodstuffs.....	529	11.8
Tobaccos and beverage.....	18	0.4
Raw materials, inedible.....	2,169	48.3
Mineral fuels .....	742	16.5
Oils and fats .....	38	0.8
Chemical products .....	265	5.9
Manufactured products.....	257	5.7
Machineries .....	403	9.0
Sundries .....	60	1.3
Re-imports.....	7	0.2
Total.....	4,491	100.0

Source: Handbook of Economic Statistics Toyko: Economic Planning Agency, 1963.



An example of the percentage distribution of import commodities in kind during the postwar period is illustrated in the foregoing table.

The import quantum index over the period from 1953 to 1961 classified into eight categories and having 1960 as the base year will serve as statistical illustration of the import trend of these items.

Table 4 - 4

IMPORT QUANTUM INDICES : 1953 - 1961

1960 = 100

Year	Food	Textile mater- ials	Metal Ore and Scraps	Other raw mat'ls	Miner- al fuels	Chemi- cals	Machi- neries	Sundries
1953	88.8	65.8	24.7	43.4	31.2	33.6	55.2	20.7
1954	98.8	58.8	27.3	47.2	31.9	32.1	55.5	19.6
1955	97.9	59.3	27.4	58.0	34.1	38.1	42.4	16.3
1956	89.7	83.9	51.2	60.5	42.9	53.1	54.5	53.2
1957	83.9	81.7	70.6	67.8	61.8	60.5	84.0	124.4
1958	89.0	81.4	38.7	56.7	54.2	59.4	96.3	44.5
1959	89.0	90.4	75.9	86.0	67.8	81.9	92.4	64.2
1960	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1961	122.7	121.8	139.6	119.3	131.6	127.0	147.9	152.1

Source: Economic White Paper Tokyo: Economic Planning Agency, 1962

Theoretically, effects of import restriction through foreign exchange budgeting and import licensing systems will be analysed in terms of; (1) protective effect, (2) consumption effect, (3) redistribution effect, and (4) revenue effect.<sup>3</sup>

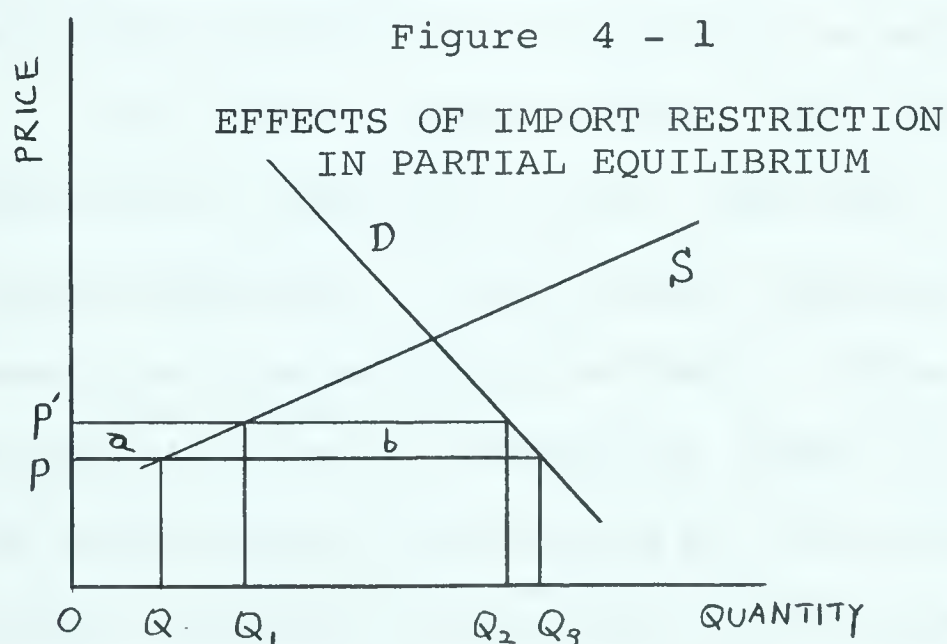
3.

Charles P. Kindleberger, International Economics. Homewood, Illinois: Richard D. Irwin, 1958. p.236





Suppose, for example, that the shape of demand and supply curves with respect to a certain commodity, say automobiles, is known and such curves are illustrated in the following diagram. In Figure 4 - 1 the country produces  $OQ$  of automobiles domestically while importing  $QQ_3$  of them from the rest of the world prior to the imposition of import restriction and the equilibrium domestic price of automobiles is given at  $P$ . The country now imposes restriction upon the import of automobiles to the effect that the volume of automobiles imported is reduced to  $Q_1Q_2$ . The post-restriction equilibrium price for an automobile will then be raised to  $P'$ ; and total domestic consumption of automobiles will be reduced to the amount represented by  $OQ_2$ , while domestic production of automobiles will be increased by  $QQ_1$ .



In the above diagram the protective effect is shown by the increase in the domestic production of automobiles, or  $QQ_1$ , consumption effect by reduction in total consumption, or  $Q_2Q_3$ , respectively. The redistribution effect is the quadrilateral a, which is the additional economic rent paid to the pre-existing domestic producers, plus the rent to new producers who have entered





after the restriction has been imposed. In the case of quantitative control of imports in contradistinction to the case of the imposition of tariffs, the revenue effect is not explicit. Under a tariff, the rectangle represented by b would be governmental revenue in the importing country, but under direct control of import, it cannot be determined in advance who would receive that revenue,

It is apparent from the above diagram that effects of import restrictions upon a national economy largely depend upon the elasticities of supply and demand schedules in a particular industry of that economy. In principle it would be possible to calculate these elasticities with respect to all the relevant industries in the postwar Japanese economy and determine what has been the net economic effect of the import restriction in quantitative terms. In actuality, however, the task would probably entail insurmountable difficulties, technical as well as conceptual, for analysts. But there is some evidence that demand for a certain group of commodities, especially those "American luxuries", was relatively price-inelastic in the postwar Japanese economy because of the international demonstration effect.<sup>4</sup> Under the international demonstration effect, consumption level of a nation as a whole will be predominantly determined by the current consumption level of advanced countries rather than by the domestic price and income levels of the nation in question. Furthermore, it is believed that the supply elasticity of certain groups of commodities was relatively great during the postwar period. Figure 2 - 1 in Chapter II of this thesis will probably serve as a statistical evidence of this fact, at least indirectly. It appears reasonable

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<sup>4</sup>. See Chapter II of this thesis, especially pp. 50 - 54



to associate relatively high supply elasticity of manufactured goods with rapidly growing private fixed capital formation. The combined effect of relatively low demand elasticity and relatively high supply elasticity, in the context of the implications in Figure 4 - 1, would be that even a fraction of import restriction imposed upon a certain commodity would provide domestic producers with appreciable price incentives.

The time-honored controversy between protectionist and free trade school seems to be still in full swing not only among professional economists but also among those who are directly concerned with the formulation of commercial policies. Even in a small seminar at a university, it is not very rare to discover two distinct groups of protagonists, one, the protectionist and the other, the free-trader. Apart from a detailed appraisal of this fundamental controversy in the theories of international trade, it is at least possible to argue that the case of the postwar Japanese economic development provides an excellent example of how successfully protectionist commercial policies could be applied to the development of a less-developed country under certain conditions.

In a simplified manner, the problems of free trade versus protection seem to be boiled down to the arguments of "infant creation" and "infant protection". In its fundamental importance, the creation of infant far exceeds its protection. If, for example, a country attempts to "protect" a certain industry despite the fact that the industry concerned is still virtually non-existent, by imposing tariffs and restricting competitive imports, the net effect of such commercial policies would prove to be quite





harmful to the future development of the country's economy. Protection must be preceded by creation; and a less-developed country would find it far more beneficial to specialize in industries along the line of comparative advantage rather than to forcibly and unnaturally protect half-born infant industries. The case of the postwar Japan seems to be especially relevant in this particular context. In spite of the devastating effects of the last war, Japan in the early 1950's was by no means an underdeveloped country in its conventional sense of the term "underdeveloped".

It is generally believed by economic historians that Japan underwent the so-called take-off stage in the early 1900's , and that one of the most effective and powerful engines to let the economy take off from the tradition-bound stage was her export industries which heavily depended upon sericulture (silk worm breeding and production of raw silk), in which the country held a definite comparative advantage over the rest of the world. It was mainly through the sericulture that the country earned foreign exchanges which were utilized in the task of modernisation of the whole economic structure, involving the establishment of transportation and communication systems, educational and even cultural re-orientation of the nation. However colossal the war damage might have been in the immediate postwar period, the fundamental assets of the nation, i.e., literacy rate, technological knowledge, and politico-socio-economic attitudes of the people, remained almost intact. Especially important in this connection were the nation's technological potentialities. The Japanese technology in the immediate postwar period was such that introduction of essential patents and know-hows from advanced countries was



just sufficient to let the economy develop highly diversified lines of products in a relatively short period of time. The infant had already been created when the postwar Japanese economy started developing; and the infant was carefully protected behind the shield of import restriction.

In retrospect, the postwar period's import restriction was primarily introduced with the aim to solve the country's balance of payment difficulties. The import restriction thus introduced played an incidental role to accelerate the rate of industrial development and diversifications. The import restriction might not have played the similar role in some other countries where the same technological potentialities as existed in Japan were absent.

#### B. Patterns of Japanese Exports

Postwar Japan's export markets are extremely diversified. The country is believed to have established trade relationships with more than sixty countries, though the "intensity" of such relationships significantly varies from country to country. This section attempts to quantitatively reveal with what countries Japan was most strongly associated through her exports. In general statistical practices, the importance of a country's export markets is discussed in terms of their percentage weight in the total exports of that country; i.e., about one fourth of Japan's exports goes to the United States, etc. This method certainly produces some meaningful findings, especially in their relevance to policy implications, because foreign countries which buy a relatively large share of a country's exports should be constantly





watched in order to formulate and execute effective export strategy against those foreign countries. Analytically, however, this method suffers from some shortcomings, because it ignores the relative size of each export market.

"The percentages of imports which come from particular countries, the percentages of exports which go to particular countries, are, for many purposes, the most relevant data, showing the relative dependence on various external sources and markets. For some purposes, however, it may be more important to know what may be called the relative 'intensities' of its trade relations with different countries. The main reason why Britain sells more to--or buys more from--the United States than to Costa Rica, for instance, is a difference in the size of the markets which those countries offer for imports (or the amounts of goods they can provide for export); a difference which is too obvious to be interesting, and the effects of which it is desirable to eliminate in order to get some measuring rod of the relative extents to which trade reveals complementarity between the British economy, on the one hand, and those of the other two countries, respectively, on the other."<sup>5</sup>

It would be convenient to explain A. J. Brown's concept of "trade intensity" by means of a hypothetical case of world trade patterns. Some simplifying assumptions are required for this purpose ; (1) the world consists of three countries, A, B, and C, each of them engaged in international trade; and (2) cost of transportation is ignored, i.e., there is no difference between F.O.B. and C.I.F. prices. The total world exports, therefore, are always equal to the total world imports in value terms. Under these assumptions, we may establish a hypothetical world trade matrix.

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<sup>5</sup>. A. J. Brown, op., cit., p. 214.





A HYPOTHETICAL WORLD TRADE MATRIX

Importers/Exporters	A	B	C	Total exports
A	--	$x_{ab}$	$x_{ac}$	$X_a$
B	$x_{ba}$	--	$x_{bc}$	$X_b$
C	$x_{ca}$	$x_{cb}$	--	$X_c$
Total imports	$M_a$	$M_b$	$M_c$	$W$

In the above matrix,  $x_{ab}$  designates A's exports to B and at the same time, B's imports from A. The total amount of A's exports, therefore, is calculated as  $X_a = x_{ab} + x_{ac}$ . Since there is no difference between F.O.B. and C.I.F. prices,  $M_a + M_b + M_c = X_a + X_b + X_c = \text{World Trade}$ .

The purpose of estimating trade intensities, as A. J. Brown explains, is to "compare the actual division of a country's exports between various channels with the division which would result if the country exported to various countries concerned in proportion to their total external purchases of goods."<sup>6</sup> For this purpose, we may simply compare the relative share of foreign country's purchase from a home country in the total exports of that home country with the relative size of the foreign country's markets in the world trade. In the above hypothetical case, Country A's export intensities with respect to the rest of the countries may be calculated by the equation:  $i_a = \frac{x_{aj}}{X_a} \cdot \frac{M_j}{W - M_a} \times 100$ , where  $j = B, C$ .

<sup>6</sup>. ibid., p.214.



If  $i_a = 100$ , Country A may be said to be exporting to the country concerned proportionately to the relative size of that country's market. In this case, one may say that A has "neutral" intensity of exports with respect to the country in question.

Practical application of the above method involves some technical difficulties. In the actual world, the total world exports are not necessarily equal to the total world imports because of the transportation costs involved. Conventionally, exports are recorded on F.O.B. basis and imports on C.I.F. basis. For our immediate purposes, however, the discrepancy between C.I.F. and F.O.B. prices would not be so serious.

Table 4 - 5

JAPAN'S EXPORT INTENSITIES WITH RESPECT TO 21 COUNTRIES

1952 - 1961

	1952	1953	1954	1955	1956	1957
Taiwan.....	1,991	1,847	1,006	1,345	2,592	1,639
Burma.....	677	1,081	1,059	902	806	1,064
Pakistan.....	1,183	248	792	643	229	153
Hong Kong.....	722	533	609	573	665	594
Indonesia.....	387	801	902	454	390	339
Phillipines....	248	301	271	358	427	600
Singapore.....	330	217	220	247	201	209
India.....	133	133	161	264	268	207
Argentina.....	47	103	243	305	151	26
Brazil.....	34	94	227	108	144	69
U.S.A.....	121	112	118	154	155	185
S. Africa.....	94	138	115	91	99	133
Australia.....	86	35	72	108	66	100
U.A.R.....	28	34	66	108	86	168
Canada.....	20	18	22	37	43	46
U. K.....	46	20	26	24	23	28
Sweden.....	51	35	23	28	28	40
Germany (W)....	26	24	19	18	20	31
Belgium.....	14	15	15	16	17	19
Italy.....	24	10	10	12	21	18
France.....	40	17	13	11	10	11





Table 4 - 5 (Continued)

	1958	1959	1960	1961	Average*
Taiwan.....	1,565	1,225	1,110	1,140	1,446
Burma.....	894	816	790	769	886
Pakistan.....	211	243	290	260	425
Hong Kong.....	483	505	494	470	565
Indonesia.....	345	512	633	617	538
Phillipines.....	622	707	828	657	502
Singapore.....	244	200	211	245	232
India.....	178	130	153	162	179
Argentina.....	82	67	72	90	117
Brazil.....	120	92	100	188	118
U.S.A.....	176	230	236	232	172
S. Africa.....	97	129	116	110	112
Australia.....	136	144	196	130	107
U.A.R.....	38	67	100	100	80
Canada.....	56	68	68	64	44
U. K.....	40	33	32	30	30
Sweden.....	33	31	41	32	34
Germany (W).....	22	19	21	24	22
Belgium.....	13	20	20	18	17
Italy.....	16	16	20	17	16
France.....	6	8	8	8	13

Note: C.I.F. figures are used for the world imports. \*arithmetic means.

Source: Yearbook of International Trade Statistics New York: United Nations, 1963.

The export intensities computed in the above table should not be interpreted as an index of "natural" trade complementarity. The trade complementarity in terms of the comparative advantage may or may not be reflected in these figures. Import restriction, duties, geographic separation, and political situations may all combine to distort the pattern of trade which is expected to prevail in terms of the principles of comparative advantage.



A quantitative study of the Leontief type conducted by two Japanese economists concludes as follows.

"According to our findings, an average million yen's worth of Japanese exports embodies more capital and less labor than would be required for the domestic replacements of competitive imports of an equivalent amount. This implies, if interpreted in the manner of Leontief, that Japan's specialization in the international division of labor is found in capital-intensive lines of production. If the intuitive notion that Japan is a labor-abundant and hence capital-scarce country is accepted, then our findings seem to offer another instance of the famous Leontief paradox. These paradoxical findings occur at least partly because Japan's place in the world economy is mid-way between the advanced and underdeveloped countries. In consequence, she may be expected to have a comparative advantage in labor-intensive goods when trading with the former and in capital-intensive goods when trading with the latter."<sup>7</sup>

It appears that the above proposition is not too far from reality, since Japan's labor-intensive exports mainly go to the advanced countries while those capital-intensive commodities are exported to the underdeveloped countries. In 1960, for instance, the largest single items of Japan's exports to India, Phillipines, U.S.A. and U. K. were steel (47% of Japan's total exports value to India), machineries (53%), garments (11%) and fishery products (40%), respectively.

### C. Growth of Exports: Statistical Examinations

First, the growth trends of world exports and imports will be estimated and these findings will be compared to the export

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7.

Masahiro Tatemoto and Shinichi Ichimura, "Factor Proportions and Foreign Trade: The Case of Japan", The Review of Economics and Statistics, November, 1959.





growth rates of seven major exporting countries including Japan. Second, the growth trends of Japanese exports will be examined in the light of the general trend of world trade as well as of the trend of GNP of those countries which provided relatively large markets for Japanese exports. No detailed attempt will be made in this section to investigate some probable causes of Japan's export growth which, as will be revealed shortly, demonstrated a phenomenal rate during the period under review.

At this moment, some words are required on the methods of the estimation of growth trends of exports. Generally speaking, there are three distinctive techniques to calculate a rate of growth of an economic variable over time.<sup>8</sup> The first and probably the most primitive technique is to take the ratios of economic value (in our case, export) during successive time periods:

$$g_1 = \left( \sqrt[n-1]{\frac{x_2}{x_1} \times \frac{x_3}{x_2} \times \dots \times \frac{x_n}{x_{n-1}}} - 1 \right) 100.$$

where  $g_1$  is the rate of growth and  $x$  the variables in periods 1, 2, 3, etc. Since all the terms except two under the root sign cancel out, one may simply put it as follows:  $g_1 = \left( \sqrt[n-1]{\frac{x_n}{x_1}} - 1 \right) 100.$

This method, however, yields only the terminal percentage increase in the variable analysed. The result obtainable from this method, therefore, is sometimes quite misleading. Suppose, for example, that some country's exports grow from 100 to 120 in the first instance, then drop to 70, rise again to 130, then dip in to 60, and eventually end up in the order of 100 at end period. Applying the above method to this case, one will come out with the

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For a detailed discussion on the methods of measurement of growth rate, see Boris P. Pesek, "Economic Growth and Its Measurement", Economic Development and Cultural Change





result that the rate of export growth of this country over the period concerned was zero.

The second method, perhaps slightly more sophisticated is the so-called moving average. There are two techniques to take average of year-to-year percentage changes in economic variables; one is an arithmetic mean and the other a geometric average. A geometric average of percentage changes appears to be more preferable to an arithmetic mean since the former is based on the logarithms of percentage changes or link ratios and, therefore, gives equal weight to changes of equal proportionate magnitude. However, a geometric average has a serious shortcoming; it cannot be used if zero ratios or negative ratios in an odd number of time appear in the data.

The third method, probably one of the best available, is to compare an estimated initial period value to an estimated end period value, instead of observed these values. The formula is similar to the first method:

$$g_3 = \left( \sqrt[n-1]{\frac{eX_n}{eX_1}} - 1 \right) 100.$$

where  $eX_1$  and  $eX_n$  are estimated values of  $X$  at the initial and end periods, respectively. Regression techniques are generally used to estimate  $eX_n$  and  $eX_1$ . A widely used regression equation to fit trend lines of time-series data is:  $\log X_t = a + bt$ , where  $X_t$  is the value of an economic variable at period  $t$  and  $a$  and  $b$  are the constants. In the following statistical examinations, the third method will be adopted.

By adopting the equation:  $\log X_t = a + bt$  to the data supplied by United Nations' Yearbook of International Trade Statistics, one obtains the results as follows.



Table 4 - 6

GROWTH RATES OF WORLD TRADE  
1952 - 1961

unit: million U. S. dollars

	1952		1961		Annual rate of growth
	Observed	Estimated	Observed	Estimated	
Exports	80,600	79,251	133,400	133,400	6.1 %
Imports	87,100	83,298	140,200	145,760	6.4 %

Similarly, one can compute the annual rates of export growth for seven major exporting countries, the results of which are shown in Table 4 - 7.

Since more than 90 per cent of Japan's exports consisted of manufactured goods, it will be more relevant to investigate the trend of world manufactured exports and compare it to the trend of Japanese manufactured exports during the period under review.

Table 4 - 7

EXPORT GROWTH RATES OF SEVEN MAJOR EXPORTING COUNTRIES  
1952 - 1961

unit: million each country's currency

Countries	1952		1961		Annual rate of growth
	Observed	Estimated	Observed	Estimated	
France	13,395	11,715	35,585	33,389	11.2 %
Germany (W)	4,001*	4,083*	12,689*	13,114*	13.9 %
Italy	866,537	825,880	2,617,346	2,480,800	13.0 %
Japan	1,273*	1,478*	4,236*	5,440*	15.6 %
Sweden	8,134	7,496	14,197	13,781	6.9 %
U. K.	2,729	2,644	3,840	3,850	4.3 %
U.S.A.	15,054	14,915	20,755	20,693	3.7 %

\* million U. S. dollars.

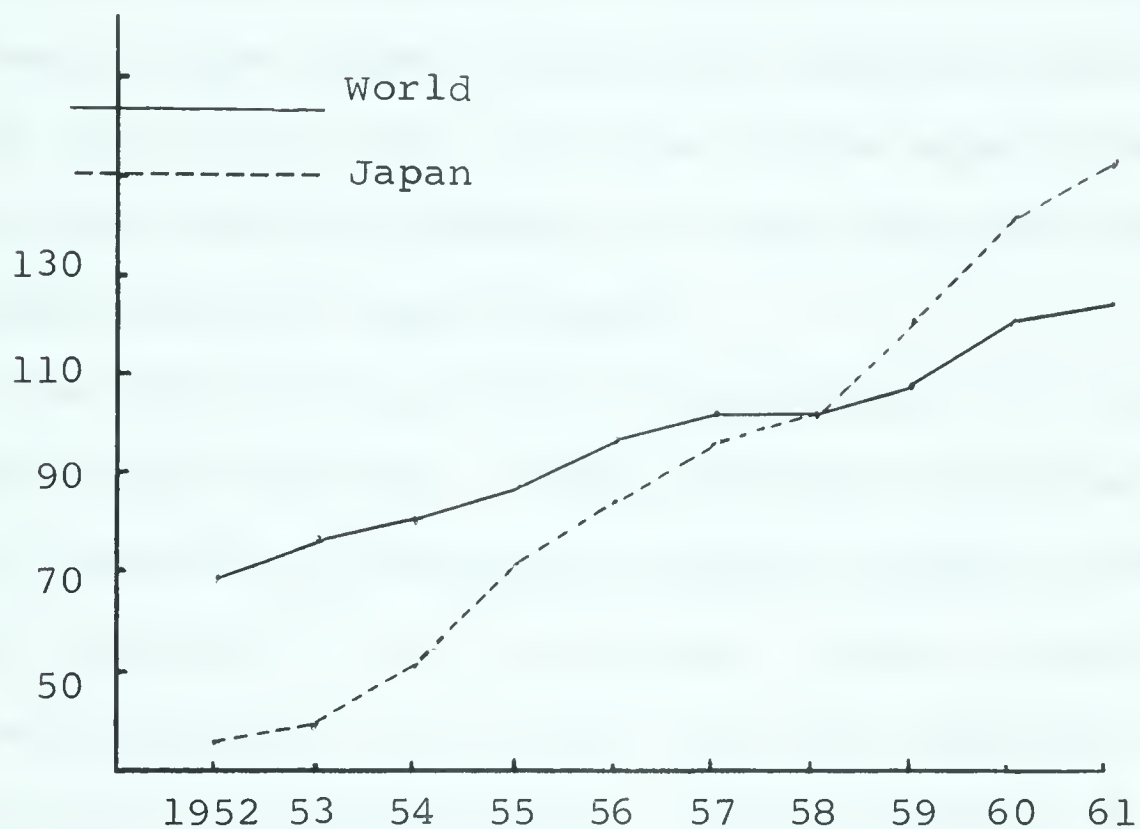




Figure 4 - 2

QUANTUM INDICES OF MANUFACTURED EXPORTS, WORLD AND JAPAN  
1952 - 1961

1958 = 100

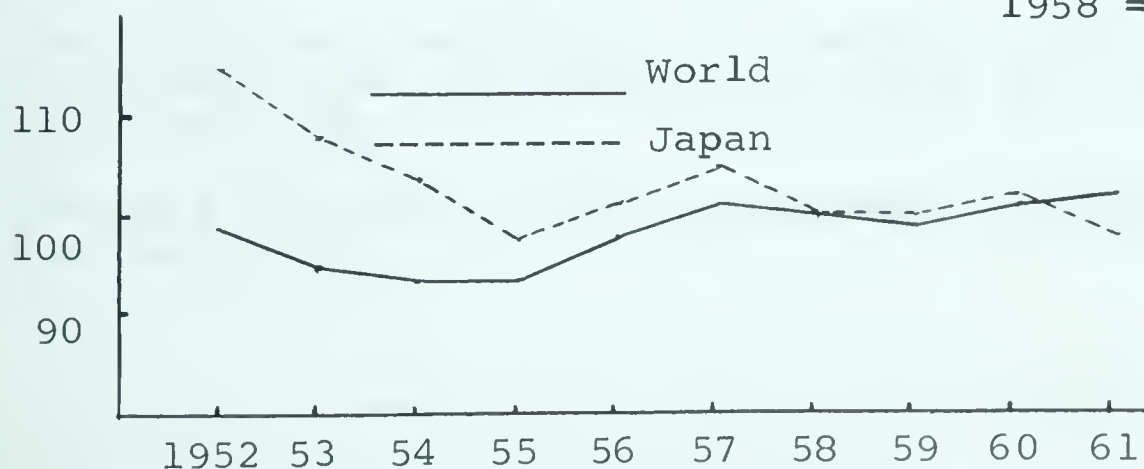


So far, we have had some information on the fact that Japanese exports grew at the rate considerably higher than the average world trend. It is generally believed that a country's exports are influenced by the country's export prices and also by the general trends of income in those countries to which the country's commodities are exported.

Figure 4 - 3

EXPORT PRICE INDICES OF MANUFACTURED GOODS, WORLD AND JAPAN  
1952 - 1961

1958 = 100





It is observed from Figure 4 - 3 that the prices of Japanese manufactured exports declined from 1952 to 1955. Over the period from 1952 to 1961, manufactured export prices of France, Italy, Germany and Benelux also showed a declining tendency while the export prices of U. K. and U.S.A. rose. In view of the export growth rates of these countries, one may probably hold that the price change is one of the determinants of export growth.

We shall now turn into investigation of income trends of Japan's major export markets. Nine countries are selected in terms of their relative significance as Japan's export markets.<sup>9</sup> They are U.S.A., Taiwan, U. K., Phillipines, Canada, Australia, Burma, South Africa and Germany(W), and these countries combined to purchase approximately 41 per cent of the total Japanese exports on the average during the period from 1952 to 1961. The annual rates of real GNP growth of these countries during the period under review are estimated as follows: U.S.A. (2.7%), Taiwan (7.1%), U. K. (2.6%), Phillipines (5.4%), Canada (3.0%), Australia (5.2%), Burma (3.2%), South Africa (5.2%), and Germany(W) (7.0%). A weighted average of annual real GNP growth rate of these countries is computed as 4.2 per cent.<sup>10</sup>

What can we conclude from these informations? The real GNP of Japan's major export markets grew at the annual rate

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9.

Some important Japanese export markets, such as India and Indonesia, are excluded from the computation simply due to the lack of information on real GNP.

10.

Weights utilized are the percentages of Japan's export value to these countries.





less than five per cent and Japan's export prices declined at the annual rate of approximately one per cent and yet the country's exports enjoyed a phenomenally high growth rate of 15.6 per cent per annum during the period from 1952 to 1961. Shall we conclude, then, that the income as well as price elasticities of Japanese exports were extremely high? Formally, this is legitimate conclusion. However, one should go at least one step further and question why both elasticities were so high during this particular period. In terms of commodity composition, Japanese exports had nothing unusual compared with other exporting countries specializing in the lines of manufactured goods.

#### D. Some Problems of Exchange Rates

This section is an attempt to answer what appears to be one of the most crucial questions of this thesis: what was the real cause of Japan's export growth? Although it sounds rather unconventional, the conclusion will be put forward at the outset: the current exchange rate of yen with respect to manufactured goods is undervalued and, therefore, the Japanese manufactured export prices were held at a low level throughout the entire postwar period.<sup>11</sup>

The current exchange rate of yen was fixed at 360 yen

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11.

It is subject to some qualification here to use the term "exchange rate", because what follows is not an attempt to evaluate the current exchange rate of yen itself. The term "exchange rate" is used in a very limited sense in this section. The fact that yen is currently undervalued with respect to manufactured goods may simply imply that Japan has a comparative advantage in the line of manufactured commodities.





per one U. S. dollar in 1949 under the Dodge program and has not been altered throughout the entire postwar period. The basis of this fixation was the relative purchasing power of yen and U. S. dollar in 1949. Before the introduction of a single exchange rate, international payments were cleared on the basis of multiple exchange rates. One should recall at this moment that in 1949 the Japanese economy was still in chaotic situations and hyper-inflation was progressing at full steam. One can readily imagine, therefore, that the Japanese prices of some commodities were exorbitantly higher than the U. S. prices. Some examples of the multiple exchange rates as of February, 1949 are listed in the table below.

Table 4 - 8

MULTIPLE EXCHANGE RATES: SELECTED ITEMS  
(February, 1949)

unit: yen per one U. S. dollar

Items	Exchange Rates
Rubber toy.....	550
Sewing machine.....	384
Cotton yarn.....	250
Bicycle.....	542
Radio receiver.....	550
Sheet glass.....	600
Coal.....	294

Source: A Postwar Economic History of Japan Vol. V.  
Tokyo: Economic Planning Agency, 1962. p.65.

One may keenly realize the changes time has brought about when one notices that such items as rubber toy, sewing machine, bicycle and radio receiver all proved to be Japan's export specialties in later years.



The drastic deflationary measures taken under the Dodge program effectively halted the hyper-inflation and the price mechanism restored its normality. After that the prices had been relatively stable until the outbreak of the hostilities in Korea in June, 1950. One of the undesirable side effects of the so-called Korean boom was the revival of an inflation and the whole-sale price index rose from 246 in 1950 to 342 in 1951 as against 1 in 1934 - 36. Observing these phenomena, Kenneth K. Kurihara commented as follows.

"Part of the adverse effect of price inflation in the concrete context of postwar Japan is sometimes attributed to a wrong exchange rate. Thus the official rate of  $Y360 = \$1$  decided by Mr. Joseph Dodge in 1949 is considered greatly overvalued in relation to the actual purchasing power of the yen. Because Japanese prices have risen since then by some 40 per cent more than American prices, the parity rate reflecting relative changes in purchasing power is estimated to be around  $Y500 = \$1$  vis-a-vis the pegged rate of  $Y360 = \$1$ .<sup>12</sup>

On several occasions, an economist can draw two opposing conclusions from the observations of exactly the same data. While Kenneth K. Kurihara holds that yen was overvalued in the early 1950's, one can still maintain that the rise in Japanese prices relative to U. S. prices was a manifestation of "catching-up effect" of yen to dollar.<sup>13</sup> The whole argument, of course, depends upon whether one should regard the fixation of the exchange rate in 1949 as adequate. If it is held that the pegging was adequately made in 1949, Kurihara's conclusion is correct. However, as far as one considers the official rate of  $Y360 = \$1$  as an undervaluation of yen, the price move in the early 1950's should be interpreted as reflecting the catching-up effect of yen to dollar.

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<sup>12</sup>. Kenneth K. Kurihara, "Japan's Trade Position in a Changing





Another factor which should be taken into account in discussing the exchange rate problems in the postwar Japanese economy is the entrance of new commodities which had been virtually non-existent in the lines of production during the immediate postwar period. The diversifications of manufactured products during the postwar period were remarkable and it is rather doubtful whether the formation of domestic prices of those new commodities was heavily influenced by the current exchange rate. The rise in productivity may be also counted as a factor contributing to having improved the international competitiveness of Japanese prices.

Whether the 1949 exchange rate fixation was adequate is still open to question and the argument on that level does not seem to prove so fruitful. What is more important for our immediate purposes will be a cross-section examination of whether yen was currently undervalued relative to the world hard currencies in a certain period during the postwar years. Following is an attempt to quantitatively reveal that yen was currently undervalued in the mid 1950's. First, one should start with the presentation of a theoretical framework of statistical measurements of exchange rate undervaluation.

The conceptual basis of the following method is nothing more than national income account. It would be convenient to discuss the method in terms of a hypothetical example.

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World Market", The Review of Economics and Statistics, November 1955, p.415.

13. J. R. Hicks, Essays in World Economics, London: Oxford University Press, 1959. Chapter 7, pari. pass.



The following assumptions are made: (1) There are two countries, A and B, which have different units of currency, say, yen and dollar; (2) Both countries have three kinds of industry, i.e., Industries X, Y and Z; (3) National income of the two countries is the sum of income accruing only to these three industries; (4) The value added of each of these industries can be measured by the money income received by those who work for their respective industries, i.e., value added of Industry Y can be measured by the income accruing to the workers of that industry; and (5) The exchange rate between two currencies is fixed and it is assumed that the current exchange rate is Y16 = \$1.

In a specified period of time, Country A's total production and national income created by that production are given as follows.

#### COUNTRY A'S PHYSICAL OUTPUT AND INCOME

Industries	Physical output	Income	Value added(%)
X .....	20 p.u.*	700	33.3
Y .....	40	800	38.1
Z .....	15	600	28.6
Total .....	--	2,100	100.0

\* p.u. stands for physical unit, such as tons of steel.

Similarly, physical output and income of Country B are given as follows.

#### COUNTRY B'S PHYSICAL OUTPUT AND INCOME

Industries	Physical output	Income	Value added(%)
X .....	40 p.u.	100	37.0
Y .....	50	90	33.3
Z .....	30	80	29.7
Total .....	--	270	100.0



From the above two tables, one may calculate the physical production indices of Countries A and B, having Country B's output as the base. It should be remembered, however, that these indices cannot be aggregated because of different physical units. In order to aggregate these physical indices, one may use the percentages of value added as the weight. Apparently, two sets of weight are available, i.e., Country A's weight and Country B's weight; and the results may differ depending upon which weight is to be employed. Whichever weight may be used, the results will be necessarily biased. If there exists some similarity in the industrial structure between two countries, such biases would not be so serious, but otherwise the exercise might yield utterly nonsensical results.

#### UNWEIGHTED PHYSICAL OUTPUT INDICES

Industries	Country A	Country B
X .....	50	100
Y .....	80	100
Z .....	50	100

#### WEIGHTED PHYSICAL OUTPUT INDICES

Industries	Country A's weight		Country B's weight	
	Country A	Country B	Country A	Country B
X .....	16.65	33.30	18.50	37.00
Y .....	30.48	38.10	26.64	33.30
Z .....	14.30	28.60	14.85	29.70
Total .....	61.43	100.0	59.99	100.00





It is learned from the above tables that Country A's physical abundance is estimated at 61.43 per cent of Country B's in terms of the Country A's weight and 59.99 per cent in terms of Country B's weight. In either case, it is certain that Country A's relative material richness is more than one-half of Country B's. One may now expect that this relationship should be also reflected in the relative level of national income in two countries. If two countries have the common currency unit, the relative physical abundance will be necessarily reflected in the relative level of national income of two countries, i.e., a twice as physically abundant country will enjoy twice as high national income. Therefore, this principle will serve as the criterion which can judge the adequacy of an exchange rate. A perfectly evaluated exchange rate means that two different national currencies can be used as the common yard stick to measure the value of commodities in either country.

In this hypothetical case, the exchange rate is fixed at  $Y16 = \$1$ . Let us, then, convert the national income of Country A into dollars by using this exchange rate to see whether Country A's national income expressed in dollars adequately reflects the country's relative physical abundance.

#### NATIONAL INCOME EXPRESSED IN DOLLARS

NATIONAL INCOME		NATIONAL INCOME INDEX	
Country A	Country B	Country A	Country B
131.25	270.00	48.5	100.0

Country A's national income expressed in dollars is only 48.5 per cent of Country B's in spite of the fact that the former's relative physical abundance is 61.43 in terms of Country A's



weight and 59.99 in terms of Country B's weight, both as against 100 of Country B. Why does this happen? An answer is that in the above hypothetical example, yen is undervalued vis-a-vis dollar. The rate of exchange undervaluation, however, cannot be given singularly due to the difference in the weights employed. In terms of Country A's weight, yen is undervalued relative to dollar by 21 per cent and in terms of Country B's weight, 19 per cent. In summary, the rate of exchange undervaluation (or overvaluation) is defined as  $100(\frac{P}{\bar{P}} - \frac{Y}{\bar{Y}})$ , where P and Y are the physical level of production and the level of converted money income accruing to that production, respectively.<sup>14</sup>

Statistical application of the above method requires massive information on industrial and income structures of the countries whose rates of exchange are to be evaluated. This kind of work will be perhaps beyond the scope of this thesis. However, access can be had to a pioneering work in this particular field conducted by Professor Miyonei Shinohara with the assistance of Economic Planning Agency of the Japanese Government. The following statistical presentation, therefore, will entirely depend upon the work done by Professor Miyonei Shinohara.<sup>15</sup>

Professor Shinohara examines six major currencies of the world, namely, dollar of the United States, pound sterling of the United Kingdom, de<sup>s</sup>utch mark of Germany(W), franc of France, lire of Italy, krone of Sweden, and yen of Japan with respect to

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<sup>14</sup>. Alternatively, one may use the ratio of the physical level of production to the level of converted money income.

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Miyonei Shinohara, "Relative Production Levels of Industrial Countries and Their Growth Potentials", Weltwirtschaftliches Archiv, Band 86, Heft 1, 1961





the period toward the mid 1950's. The starting point of Professor Shinohara's work is the compilation of the physical production indices of 62 manufacturing commodities produced in these countries with the level of production of the United States as the base. The individual quantum index numbers are consolidated into the following categories: (1) Metals, (2) Machinery and construction, (3) Chemicals and ceramics, (4) Food, beverages and tobacco, (5) Textiles and leather (6) Paper and pulp, (7) Electricity and gas, and (8) Mining.

This industry classification is conventional except for the second item or "Machinery and construction". Professor Shinohara's own explanation for the use of this rather unusual category is as follows.

"The reader may be puzzled by the second category, 'Machinery and construction', for no published index has yet combined machinery with construction. However, this was necessitated by the fact that there were very few items in the machinery industry. The United Nations, Statistical Yearbook enumerates only wireless receivers (radios), merchant vessels and motor vehicles. Therefore, we have attempted to estimate the machinery output from the input side, giving up the use of the above three items. Fortunately, the U. N. statistics give the volume of steel consumption which is one of the chief raw materials used in the production of machinery. However, since steel is not only used in machinery production but also in construction, we were forced to combine machinery and construction. Moreover, we must take into consideration the consumption of cement and lumber, besides that of steel, as major construction materials. The index for 'machinery and construction' is thus constructed by taking the weighted average of the indexes of domestic consumption of steel, cement and lumber, using the values of consumption of these three as weights. In aggregating the index of 'machinery and construction' thus computed into the total index of industrial production, we have used the sum of values added in the machinery<sup>16</sup> industry and construction industry as the weight."



In aggregating individual items into industries, value added is used as the weights; they are Japan weight (1955 value added, the United States weight (1954 value added), and the United Kingdom weight (1951 valued added). The final aggregation from individual industries into the index of total industrial output is made by utilizing value added of each industry as the weight; and the result of this final aggregation is presented in the following table.

Table 4 - 9

INTERNATIONAL INDICES OF INDUSTRIAL PRODUCTION : 1956

Japan weight, value added in 1955; U.S.A. = 100							
Industries	Weights	U. K.	Japan	Germany(W)	Italy	France	Sweden
Metals.....	11.4	16.1	8.9	21.7	3.9	12.7	1.9
Machinery & construction...	27.9	14.7	13.2	24.5	12.4	9.4	3.8
Chemicals & ceramics.....	17.8	18.4	18.6	31.1	13.6	16.3	2.7
Food, beve. & tobacco.....	11.8	30.4	15.5	63.2	25.3	36.0	6.0
Textiles & leather.....	14.4	42.3	50.0	32.9	25.8	26.1	3.7
Paper & pulp...	3.4	9.5	11.4	10.6	3.6	7.5	13.6
Electricity & gas.....	6.7	25.0	11.1	13.8	9.6	12.8	4.6
Mining.....	6.7	40.1	25.9	27.4	8.0	13.1	3.8
Total.....	100.0	23.5	19.9	30.1	14.3	16.9	4.0

U. S. weight, value added in 1954; U.S.A. = 100							
Industries	Weights	U. K.	Japan	Germany(W)	Italy	France	Sweden
Metals.....	13.1	18.3	9.0	23.6	3.4	14.8	2.0
Machinery & construction...	42.3	16.3	11.3	22.5	9.0	8.4	2.9
Chemicals & ceramics.....	10.8	17.3	9.4	18.6	8.2	12.2	1.6
Food, beve. & tobacco.....	11.3	23.1	8.2	28.2	9.0	20.9	2.9
Textiles & leather.....	8.8	30.1	32.7	23.8	18.4	15.5	2.4
Paper & pulp...	3.5	8.4	8.9	8.8	2.8	6.0	9.6
Electricity & gas.....	1.2	37.1	10.7	27.6	9.1	14.8	3.7
Mining.....	8.9	9.4	2.8	6.3	0.8	4.0	5.1
Total.....	100.0	15.3	11.4	21.1	7.9	11.4	2.9





Table 4 - 9 (Continued)

U. K. weight, valued added in 1951; U.S.A. = 100							
Industries	Weights	U. K.	Japan	Germany(W)	Italy	France	Sweden
Metals.....	8.2	17.4	10.6	21.1	5.3	12.3	2.2
Machinery & construction...	36.3	16.4	11.4	22.7	9.2	8.5	3.0
Chemicals & ceramics.....	11.6	27.3	10.8	29.1	10.6	13.8	2.3
Food, beve. & tobacco.....	10.0	27.7	16.9	30.6	10.3	19.1	3.9
Textiles & leather.....	16.8	36.3	34.1	27.9	22.1	23.1	3.0
Paper & pulp...	3.4	16.1	12.1	13.5	4.9	10.3	8.9
Electricity & gas.....	5.2	40.7	10.5	31.7	8.9	15.5	3.5
Mining.....	8.5	47.0	10.8	28.2	0.3	12.0	0.4
Total.....	100.0	26.1	15.5	25.6	10.3	13.7	3.0

Note: The above three tables, in their entirety, are taken from, Miyonei Shinohara, "Relative Production Levels of Industrial Countries and Their Growth Potentials", Weltwirtschaftliches Archiv, Band 86, Heft 1, 1961, p. 133.

These aggregated physical indices involve inevitable biases due to the different weights utilized. In terms of the Japanese weight, the relative physical abundance of German mining and manufacturing industries was 30.1 as against 100 of the United States in 1956 while in terms of the U. S. weight the same index turns out to be 21.1. It is an interesting question which index would more accurately reflect the relative level of industrial production of Germany(W). One possible answer to this question is that if the Japanese industrial structure is more similar to Germany(W) than that of the United States, the index computed in terms of the Japanese weight will more closely describe the relative abundance of German industrial production. The choice of weights, therefore, requires very careful consideration in this kind of





statistical exercise .

Professor Shinohara proposes to use geometric average of these weights as a solution of this bias problem, though it is felt that the conceptual meaningfulness of such an average is somewhat doubtful. As a matter of fact, Professor Shinohara himself admits that "geometric averages of these weights may not have any realistic meaning."<sup>17</sup>

In what follows, we shall examine whether the relative levels of industrial production in these seven countries are adequately reflected in the relative levels of industrial money incomes expressed in U. S. dollars. The deviation of the relative money income in dollars from the relative level of physical output, as already explained, implies some inadequacy of the official exchange rates. Industrial money incomes of these countries are obtained in each respective national currency unit from national account data and they are converted into U. S. dollars at the official rates of exchange.

The industrial incomes thus calculated are reduced into indices by using the figure for the United States as the base. The results of these procedures are illustrated in the following tables.

We shall then compute the ratios of the dollar income indices to the indices of physical output in Table 4 - 9. Three different ratios are independently calculated with respect to each country and later geometric averages of these three ratios are computed.

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<sup>17</sup>•Miyoei Shinohara, Growth and Cycles in the Japanese Economy, Tokyo: Sobunsha, 1961, p.78. Chapter 4 of this book is a reproduction of his article in Archiv. However, these lines do not appear in the original Archiv article.



Table 4 - 10

INDUSTRIAL INCOMES IN DOLLARS  
 CONVERTED BY THE EXCHANGE RATES: 1956  
 unit: million U. S. dollars

Countries	Incomes	Indices
U.S.A.....	135,246	100.0
U. K.....	24,094	17.8
Japan.....	6,998	5.2
Germany (W).....	17,815	13.2
Italy.....	8,131	6.0
France.....	16,965	12.5
Sweden.....	4,581	3.4

Source: Yearbook of National Accounts Statistics,  
 New York: United Nations, 1959.

Table 4 - 11

THE RATIOS OF INDUSTRIAL DOLLAR INCOMES  
 TO INDUSTRIAL PRODUCTION

U.S.A. = 100

	U. K.	Japan	Germany (W)	Italy	France	Sweden
Japanese weight	75.8	26.1	43.8	42.6	77.9	84.9
U. S. weight	116.4	45.6	62.4	76.1	110.0	116.9
U. K. weight	68.2	33.5	51.4	58.3	91.5	113.0
Geometric average	84.4	34.2	51.9	57.3	92.2	103.2

Sources: Tables 4 - 9 and 4 - 10.

It is often heard on the lips of those Japanese who have travelled abroad, especially those who have spent some time in the United States, that the actual value of yen per U. S. dollar is roughly 100 yen. This common belief appears to be substantiated to a certain extent by the findings in Table 4 - 11. The actual purchas-





ing power of yen seems to be roughly three times as high as the official exchange rate indicates. An interesting case among the countries represented in the above table is France which depreciated its rate of exchange from 3.5 franc per U. S. dollar to 4.199 in 1957 and again to 4.906 per U. S. dollar in 1959. While on the other hand, Germany's deutsch mark was slightly appreciated from 4.171 to 3.996 per U. S. dollar in 1961. Especially noteworthy is the effect of the French franc depreciation on her exports. The annual rate of export growth of France over the period from 1953 to 1957 is estimated at 5.54 per cent while the same rate for the period from 1958 to 1961 is 21.5 per cent. Some factors other than the exchange depreciation might have contributed to this remarkable export growth and the impacts of the development of EEC should probably be taken into consideration. The effect of the appreciation of Germany's deutsch mark appears to have been almost negligible, at least as far as German export figures are concerned. As to Italian lire and Japanese yen, one may maintain that both currencies are still undervalued vis-a-vis U. S. dollar since the manufactured export price indices of Italy and Japan declined from 101 and 101 in 1956 to 92 and 98 in 1961, respectively.

The effects of exchange undervaluation are two-fold: export prices are made relatively cheap while import prices become relatively dear. Japan's trade structure is, in a nutshell, raw material importing and manufactured goods exporting. Some readers of this thesis might contend, therefore, that the undervalued yen would make Japan's raw material prices relatively more expensive and consequently export prices of manufactured goods would be adversely affected.



However, it should be remembered in this connection that the preceding statistical work was concerned only with manufactured goods and not with all commodities traded. If agricultural products and other raw materials had been included in the computation, we might have yielded significantly different results. It should be, therefore, emphasized that this section is concerned with the exchange rate of yen with respect to manufactured goods and not with over all rate of exchange of yen to dollar. Furthermore, one should also realize how much imported raw material is required in order to produce a dollar's worth of manufactured export. Estimating the percentage ratio:

$$\left( \frac{\text{annual export value} - \text{annual import raw material value}}{\text{annual export value}} \right) 100$$

with respect to seven representative items of Japanese export commodities, one obtains the following results: cotton yarn (55.7), cotton fabric (70.8), finished steel (72.3), machine tools (95.0), sewing machine (95.1), oil tanker (83.5), and optical instruments (99.1).<sup>18</sup>

#### E. Summary

"Postwar Japan is deeply obsessed with 'export or expire' kind of fatalism, in spite of the remarkable manifestations of economic recovery from the devastating effects of World War II."<sup>19</sup> It would be no exaggeration to say that foreign trade is a life line for the island economy of Japan. Starting with this recognition of the essential necessity of foreign trade to the Japanese economic

<sup>18</sup>. Handbook of Economic Statistics, Tokyo: Economic Planning Agency, 1963.

<sup>19</sup>. Kenneth K. Kurihara, op. cit., p. 412.





development, this chapter has attempted to discuss (1) some problems of the postwar import restriction and its impact upon the country's industrial development, (2) statistical examination of the directions of Japanese exports, and (3) growth trends of exports in quantitative terms. With the aid of statistical investigation, it was revealed that Japan's export growth rate was one of the highest observed during the postwar period. Finally, the chapter made some attempts to analyse probable causes of the high rate of export growth. The proposition was then put forward that Japanese manufactured export prices were maintained at relatively low levels throughout the entire postwar period; and this proposition was quantitatively substantiated.





## Chapter V

### CONCLUDING OBSERVATIONS

According to some observers of the subject, the post-war Japanese economic development has been an economic miracle. Consumed by the fires of the Second World War and practically reduced to ashes, the economy rose, like the legendary bird of ancient Egypt, and achieved the highest rate of economic growth ever known to any nation of the world. The faith in economic miracles, however, is somewhat foreign to an economist who is concerned with analyses of economic phenomena. A hard look at the economic factors and events involved in the performance of the postwar Japanese economy convinces us that there has been no mystery about why the country could achieve the annual rate of 9 per cent real GNP growth over the period of ten years.

In the preceding three chapters, the probable factors of Japan's economic growth have been investigated. These are, in summary, (1) the buoyancy of domestic effective demand, (2) relatively high domestic saving ratio and (3) high growth rate of exports. The effective demand constitutes the essential foundation of the growth potentiality of an economy and the savings, when materialized in the form of productive capacity through investments, play the role of realizing such potentiality as constituted by the effective



demand. If an economy is self-sufficient to a certain extent in terms of supplies of basic industrial raw materials and food, these two conditions, i.e., domestic effective demand and domestic savings would probably suffice for the achievement of a successful economic development. However, if an economy is significantly dependent upon foreign supplies of these items, another important condition will be required; the availability of means to finance the purchase of basic necessities from foreign countries. The availability of means to finance the purchase of foreign goods will be determined by the country's ability to export as well as by its access to foreign capital.

While analysing the postwar Japanese economy, one may notice that these essential conditions of economic growth have been remarkably satisfied. The broad and stable basis of domestic effective demand was provided by the Japanese consumers' enthusiasm to raise their standard of living to the level of advanced western countries, and also by investment demand which was vastly expanded through complementarity effect of investment among inter-related industries. The pattern of income distribution, coupled with abundant supply of cheap and skilled labor, enabled the business sectors of the economy to save enormously and invest. In addition, rapidly increasing imports have been satisfactorily financed by the credits obtained from exports which could enjoy relatively strong international competitiveness partly due to the favorable exchange rate of yen.

In concluding this thesis, it is felt that one significant factor has been completely ignored throughout the preceding analysis; the virtual absence of defense expenditures in the





postwar Japanese economy. After the defeat in the Second World War, Japan, once a highly aggressive military power in the Far East, was completely stripped of her military might and since then the country has made no substantial efforts to build up the armed strength. This has been partly due to the present Constitution which prohibits the possession of any kind of war potential and also permanently renounces the right of belligerency.<sup>1</sup> The general scheme of the western strategy in the Far East during the postwar period has been that Japan should become a military deterrent against the possible expansion of Communism in that region. However, it is rather doubtful that Japan has so far fulfilled that role appreciably. It is certain that Japan at present is one of the most vulnerable nations in the Far East, militarily speaking. During the entire postwar period, the defense expenditures of the Japanese Government have never exceeded two per cent of gross national product and in spite of the frequent requests of the United States to make more efforts to share the burden of defending "freedom" in the Far East, the Japanese Government has been consistently reluctant in complying with such requests. This reluctance against the involvement in the general scheme of the western strategy in the Far East will probably continue as far as the one-third minority of the Socialist holds the Diet and opposes the revision of the Constitution.

Economic consequences of the practical absence of defense expenditures are readily apparent. It will definitely lower the aggregate gross capital/output ratio. The defense expenditures, while playing a significant role as a generator of effective demand, do not contribute to the addition of productive capacity. One of

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<sup>1</sup>Reference should be made to Article Nine of the Japanese Constitution.



the definite advantages enjoyed by the postwar Japanese economy is that investments in general have been highly productive.

An analysis of growth factors clarifies at the same time what could be the bottleneck of economic growth. On some occasions, the postwar Japanese economy has experienced one significant bottleneck; the balance of payment. Were it not for the balance of payment crisis, the inventory recession of 1958 would not probably have occurred. This bottleneck, however, should not be regarded as necessarily external. No doubt that the balance of payment crisis in 1958 was caused by a sudden rise in imports and not because the Japanese exports failed to grow. This steep rise in imports, as already explained elsewhere in this thesis, was primarily due to the incapability of the Japanese steel industry of meeting the domestic demand. The problems of the so-called balance of payment ceiling could be substantially solved by reducing the marginal propensity to import.

Another probable bottleneck is labor supply, though it has not been explicit throughout the postwar period. The reader of this thesis would certainly wonder why they should worry about labor supply in a geographically small country packed with more than 90,000 thousand people. A surface observation of the recent trend of the Japanese economy, however, reveals that Japan is going to suffer from labor shortage pretty soon. The recent rise in consumer price index is often ascribed to the rise in wage rates of workers in small scale factories and retailers. Those who cannot expect much from raising productivity have to charge higher prices on the services they render in order to enjoy higher income. It is





true that small scale factories, farmers and retailers are having difficulties in securing workers. However, it appears that this labor "shortage" is a mere transitory phenomenon. Eventually, small-scale merchants and entrepreneurs of minor workshops will be swallowed up by more efficient supermarket stores and big industrial firms where higher wages can be paid without resorting to raising the prices of services and commodities. Furthermore, in 1962 approximately 30 per cent of the total working population was still employed in agriculture and forestry. It is too apparent to be discussed that in terms of factor endowment, Japan has no comparative advantage in land-intensive agriculture. The relative size of Japanese agriculture has been steadily declining in the past ten years and will continue to do so in future, thus relieving labor from unproductive agriculture for more productive manufacturing industries.

Finally, some outlook of Japan's position in internal trade. As an Article Eight status country, Japan cannot control her foreign exchange any more for balance of payments reasons. This indicates that the country will be exposed to keener competition from foreign suppliers of various commodities. One of the favorite techniques of the Japanese Government, i.e., importing patents and know-how and restricting imports of final commodities, will not work out so successfully as has been demonstrated in the past ten years. The foreign manufacturers, if they regard it as more profitable, would probably prefer selling their final products to granting patents and know-how to their potential competitors. It is, therefore, essential for the Japanese industry to develop





its own technology instead of relying upon the technological introductions. Some vulnerabilities are noticed in this respect among Japanese petro-chemical and automobile industries. However, these problems could be solved through effective tariff policy to a considerable extent. Besides, Japan does not need to produce all lines of manufactured commodities. Certainly, Japan has had a period of protectionist policy long enough to find out what should be her specialties in the international division of labor. The concomitant trade liberalization on the part of foreign countries will probably contribute to increasing the Japanese exports of such items as textile and precision and electronics machineries.



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